for men who manage

food processing

JANUARY 1955

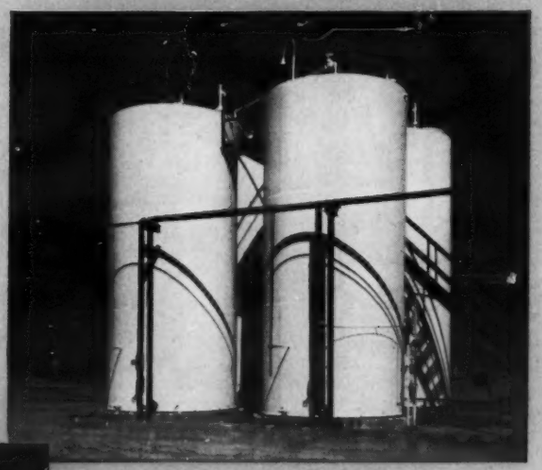
"Quick-Locator" of Contents on page 4

processing / packaging / materials handling / instrumentation / maintenance / sanitation / ingredients

"Control-Tower" techniques avoid lost time, duplicated efforts at Hood Dairy, Boston.
See page 19

EPON RESIN does it!

New paint lasts years ...resists corrosive spillage at Diamond Alkali plant



HERE'S HOW...

PAINT LEADS a hard life at the Diamond Alkali Company agricultural chemicals plant in Houston, Texas . . . and no ordinary paint can survive there for long!

A few reasons for paint failure: Processing vessels and storage tanks are subjected to spillage of chlorinated hydrocarbons and benzene, and some also to heat. In parts of the plant, painted surfaces are exposed to the highly corrosive fumes of hydrogen chloride and sulfuric acid.

In their search to find a tougher, longer lasting paint, Diamond Alkali maintenance men tried coatings of many types, including heavy duty maintenance finishes. Some "washed off" immediately; some lasted 6 to 8 months. Finally, Epon resin coatings based on the XA-200 formulation were tried — and found outstandingly successful.

The Epon cold-cured paint, applied by spraying throughout the entire plant, has been in service for *more than two years with no failure.* Painting costs — for both material and labor—are a mere fraction of what they formerly were, reports Diamond Alkali.

Call on our sales offices for names of suppliers who sell Epon resin coatings for your needs. Write for the full Epon coatings story in the new brochure, *"Planning to Paint a Pyramid?"*

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When inquiring check FP 1677 on handy form, pgs. 2-3

"THAT'S INTERESTING"

Looks like big job for "Old Sol"

Sunshine and sand combine to make possible a new kind of battery with infinite possibilities. Developed by Bell Telephone Laboratories, it is a simple looking apparatus, utilizing wafers of prepared silicon suitable for converting the sun's energy. Introduced last April, the battery had an

"How about that?— They're using sunshine to make moonshine!"

efficiency of 6%. By mid-October this had been improved to 8%—comparable to efficiency of steam and gas engines. The improved cells can be linked together to deliver power at the rate of 80 watts/sq ft of surface. Batteries have been demonstrated in powering telephone equipment and portable FM transmitters.

Recent forecasts of various authorities point to such potential uses of solar energy as providing power for irrigation, heating and cooling of dwellings, operating household appliances, and offering cheap current in areas where fuel costs are very high.

A little goes a long way

A new powerful deodorant, designed for industry and farms, is extremely economical. A one ounce bottle tied to air intake duct of air conditioning or heating unit will deodorize approximately 5000 sq ft of floor area with average ceiling height. Non-toxic and does not affect sense of smell. (McKesson Appliance Co., Dept. FP, 2226 Ashland Ave., Toledo 10, Ohio.)

Biggest radish

"Where does the tallest corn grow" is a question that will start an argument. However, there seems to be no doubt that the biggest radishes grow in Japan. Also, the biggest of the big grow in Sakurajima, Kagoshima prefecture, and frequently weigh 30 lb.

If you want more information on processes, controls or developments of products discussed herein, as you read this issue, ask our READER SERVICE DEPT. . . . use this sheet

January 1955

As you read editorial articles and advertisements which interest you, on which you'd like more information . . . note key number under each. Check back to this sheet . . . verify the key number by name of product discussed . . . check space provided. Fill in your name, title, company, main product and address at the bottom of this sheet and mail . . . no postage, no envelope necessary. Information will come to you direct, without obligation.

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☐	1679	Dryers
☐	1680	Wrapping Machine
☐	1681	Strawberry Flavor
☐	1682	Monosodium Glutamate
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☐	1683a	Antifoam A
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*"substantial operations" does not necessarily mean an extremely large plant. But requests for the magazine exceed supply so we must set standards to insure publication being sent where it can be used to best advantage.

food processing

(FOOD PROCESSING PREVIEW)

for men who manage

Published in Chicago

FOOD CAPITAL OF THE WORLD

Vol. 16 **JANUARY, 1955** No. 1

OVER 30,000 CIRCULATION IN FOOD PROCESSING PLANTS

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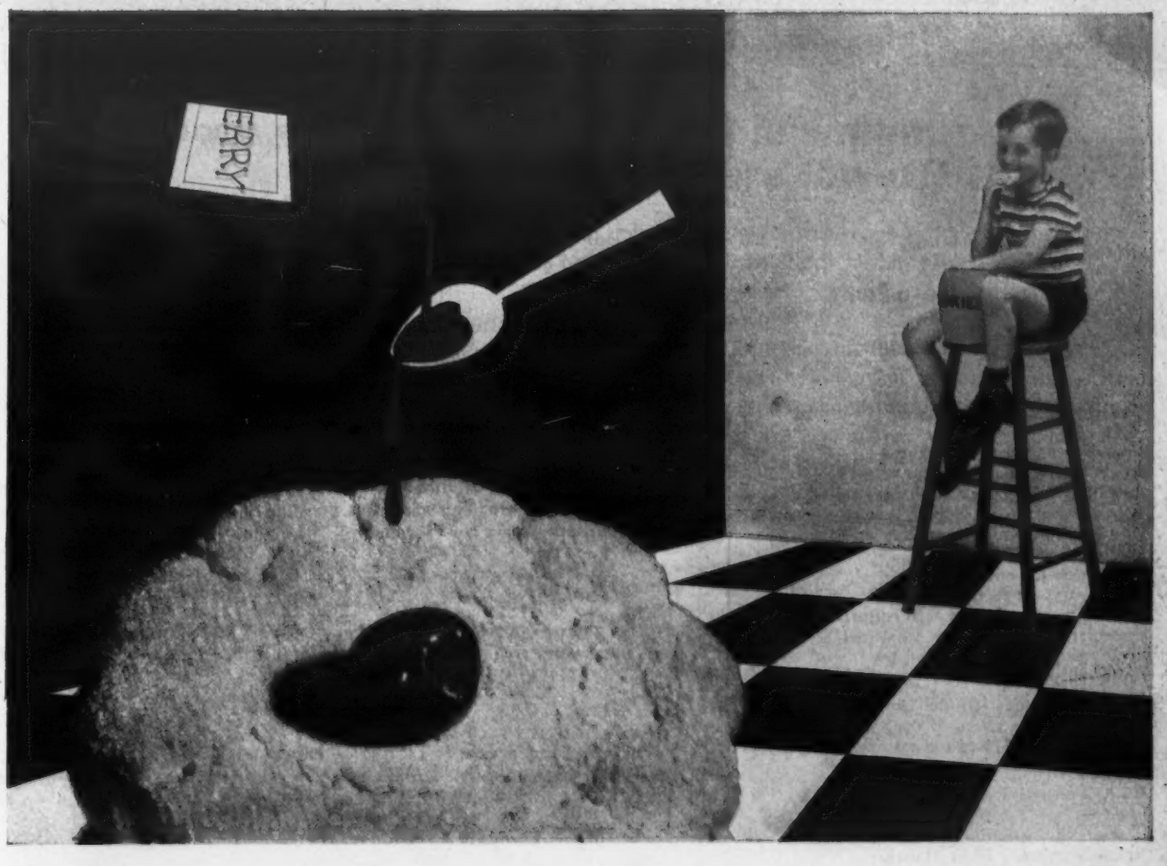

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When inquiring check FP 1678 on handy form, pgs. 2-3

IN THIS ISSUE

Over the editor's shoulder

"Wide-screen" format

You will note that the feature article on the control station at the Hood dairy—page 19—is a "wide-screen" production. If you're struck by the similarity of this approach to the latest movie techniques, it's not exactly coincidental. In fact, the broad page format that makes such editorial presentation possible was pioneered by Putman Publishing Company seventeen years ago.

Not only features like the Hood article, but all sections of the magazine are laid out for ease of selection and rapid reading.

Karl Robe, our Associate Editor, took the "wide-screen" photos. He also got the story direct from Ralph Merriman, Plant Manager at H. P. Hood & Sons while in Boston. The article explains how one centralized system controls flow of 18 different products.

Look for more of the "wide-screen" productions in future issues.

Joseph L White

ASSOCIATE EDITOR

SPECIAL SERVICE FOR READERS

1. When you want more information, see Reader Service slip opposite page 2

2. If you are looking for information on specific products, use the handy Product Directory . . . lists everything in this issue, with page reference on page 79

3. If you want to subscribe to this magazine, see reader-qualification form opposite page 3

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Food News

and Interpretations

- **Current Washington Activities**
- **Other News Developments Pertinent To Processing**

Experts form group to assist industry in developing radiation application, research

A new organization has been formed by a group of specialists in the field of radiation and its industrial and research applications, which will offer consultation services to commercial food and chemical companies. In addition, the group — Radiation Applications, Inc., 342 Madison Ave., New York 17 — furnishes a monthly analysis, including evaluation of research and other activities in their field, on a subscription basis of $50 per year.

In addition to offering service on the foods-preservation aspects of atomic and other radiations, the group will also conduct study on "growth-inhibiting" characteristics. By means of irradiation, for instance, it is now possible to store plants such as potatoes, for a period of six months to a year longer than average, without spoilage or sprouting.

Congressional committees to examine increased margins of dairy profits

Congress will take a close look at the situation of the dairy farmers in the next Congress. This is made clear by members of both the House and Senate Agriculture Committees.

One of the proposals certain to be considered is a report by the Senate Agriculture Committee urging: (1) the majority of processors of milk and dairy products reexamine their operating costs and profit-loss statements, (2) they take action to reduce the margin spread in prices as well as prevent a further spread of this margin.

Committee staff members examined the records of 10 processing plants in the chief dairy states. They are reported to have found that seven have increased their margins by 7.7 to 27.9% from Jan. 1, 1951 to June 30, 1954 while only three of the companies are reported to have decreased their margins. These companies were smaller than average, the committee said.

The report read: "Of the seven plants having increased margins, only one was found to have had increased expenses sufficient to account for the

(Continued on page 8)

Louisville Method

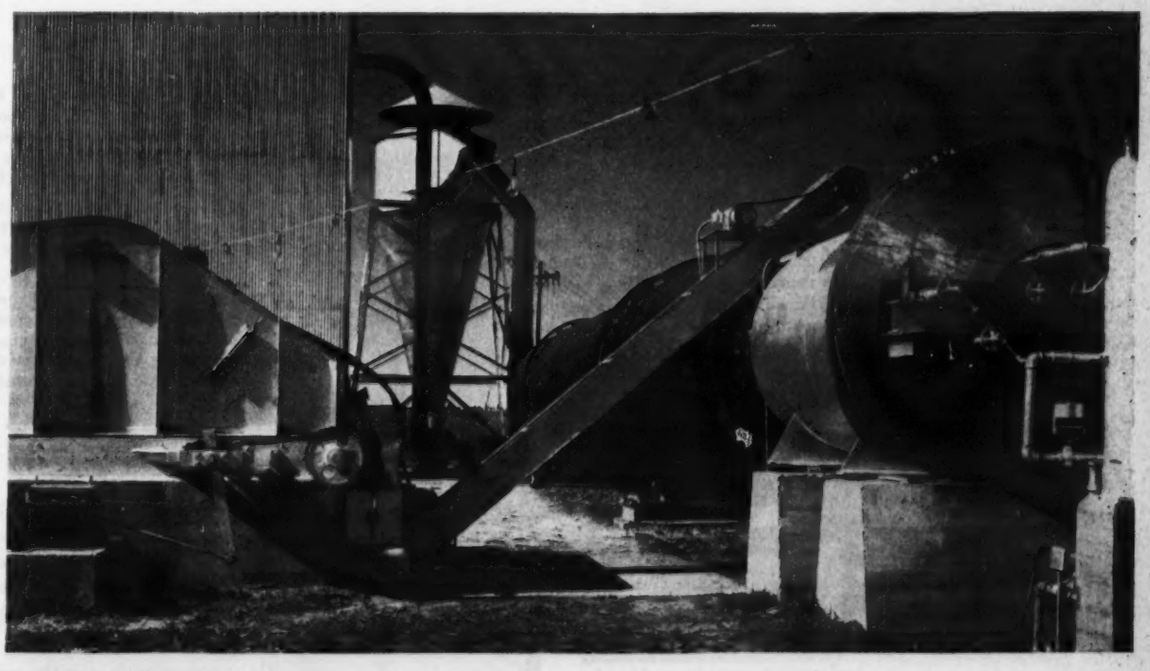
Type H Dryer User Reports . . .

"alfalfa brings premium prices . . . drying costs are *lower!*"

Louisville Type H Dryer keeps carotene content high. This top quality commands top prices anywhere. And the big production capacity of this dryer means lower drying costs, too.

The Type H Dryer, developed to retain maximum carotene value in chopped alfalfa, is also useful for handling other feedstuffs, including sweet potatoes, bagasse and sugar beet pulp, pea and soybean vines, green corn, vegetable waste, etc. Its combination of low temperature drying and large capacity will save you money on production costs and enable you to turn out a high quality product.

With our 53 years of drying experience for all types of industry, we may be able to add extra profits for you, too. Write for our Type H Dryer bulletin. Or ask for a Louisville engineer to look over your drying operation.



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For dependability see General American—creative engineering, design, construction, installation

When inquiring check FP 1679 on handy form, pgs. 2-3

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A HAYSSEN-WRAPPED PACKAGE
BY THE WRAPPING IT KEEPS!

easy, automatic operation

Regardless of size or shape, you get a neat, tight wrap on every package with a Hayssen automatic wrapping machine. *Wrapping's easier!* Also, production men report savings up to 80% over previous wrapping costs.

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No complicated adjustments from size-to-size on a Hayssen. No gears or sprockets to remove or change . . . no need for expensive mechanics to change size, either. So simple the operator does it on the job.

more sturdily built

Hayssen's simple, rugged design, using fewer moving parts, keeps these machines working and saving through years of dependable, trouble-free service. Every moving part is in the open and easily reached for maintenance and cleaning.

Since 1910, manufacturers exclusively of automatic wrapping machines for textiles, paper, frozen foods, meats, vegetables, and many other products. Whatever your product, Hayssen can solve your wrapping problem. WRITE today for more information.

Hayssen MFG. COMPANY

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When inquiring check FP 1680 on handy form, pgs. 2-3

"automation"— "how new is it?

ALBERT F. SPERRY

President and Director
of Research and Development

Panellit, Incorporated

Albert F. Sperry served as first president of the Instrument Society of America and is still one of its most active members. He is also active in the American Society of Mechanical Engineers, American Institute of Electrical Engineers, and the American Association for the Advancement of Science. He holds over fifty patents in the instrument and control field, and has authored many technical papers.

In December 1952, he received the Award of the Industrial Instruments and Regulators Division of the ASME with the citation: "for the elements which he added to the mathematical structure of process control; for his aids to operation of complex systems. . ."

After graduating from Rensselaer Polytechnic Institute, Mr. Sperry joined the research department of Republic Flow Meter Co. in 1923, where he became vice president in charge of engineering and research. In 1937, he organized Hubbard Engineering Co., but returned to the field of instrumentation during the war as an expert for various Government agencies. After the war, he organized Panellit, Inc.

Automation has been proclaimed by some as the "second industrial revolution." Our technocrats and pessimists have labeled it the "debaser" of labor. Theoretically, it could justify either label, but as a practical matter, neither one fits.

Actually, automation is merely a new word coined to describe more concisely the application of automatic control techniques to industrial machines and factories. The basic principles of feedback, of the "closed loop" control system, date back to the first steam engine and water wheel governors. Under one name or another, they have been understood and described in literature for the last thirty years. Process industries have not only understood, but also for many years have accepted "automation" quite completely for mechanization of their plants. They have been rewarded with tremendous improvement in the productivity and in the product control.

Why then is there all the fuss about something so well established in our technology? Are we possibly on the threshold of some new form of industrial robotization, with automatic plants and manless machines? Answer for process industries seems to be—no.

When we try to make food processing operations completely automatic we find several serious stumbling blocks. For one thing, the problems of measuring flavor as well as sterility or degree of pasteurization, mechanically and rapidly are far from being solved.

It is true that given sufficient time we could solve these problems. However, there comes a point of diminishing return, when the

savings possible with further automation are outweighed by the added cost of equipment and the cost of making changes.

The petroleum industry reached this point of diminishing return shortly before World War II. It was reached shortly after the war by the general chemical industry. Actually, very little change in the extent or character of automatic control for the process industries has been evident in the last five or ten years. Most of the new plants use the same basic control techniques and control devices that were available ten years ago. There has been a great deal of development effort in the field of end product and quality control. However, these devices still require considerable attendance and might better be classified as semi-automatic rather than automatic.

It is primarily in the machine tool industry where the application of automation concepts has had the greatest impact. However, the solutions to the problems of making complex machine parts are of very little help to the food processor except perhaps in packaging and materials handling.

What, then, should those concerned with processing in the food industry consider as the trend today — and in the foreseeable future?

First . . . individual automatic controllers will be used to an even greater extent throughout the more complex processes. However, they will serve largely to prevent disturbances from upsetting the equilibrium of the process rather than for overall control.

Second . . . development of end product control through product analysis will continue. However, it will soon be more useful as part of an information system rather than as automatic controller.

Third . . . the techniques of information as applied to the gathering, analyzing, and presentation of information will enable industry to get the most out of the man-machine partnership. Given adequate help the human brain will remain the best and most economical decision-maker.

Fourth . . . the complete integration of the plant information system with the plant accounting and production planning systems will evolve. By feeding relevant data from the plant into proper memory computation and read-out devices, the entire production of the plant can be subjected to analysis and operations research, so that optimization of production can become a practical reality.

Fifth . . . the emphasis in automation will be less and less on labor saving and more and more on better management, higher efficiency, and greater productivity.

In this context, the automization of information handling seems to hold the greatest promise toward meeting the demands of our dynamic and ever-expanding economy. It is both interesting and gratifying that in our competitive system of free enterprize, we find that tool most powerful, that emphasizes man's mastery over the machine rather than his dependence on it.

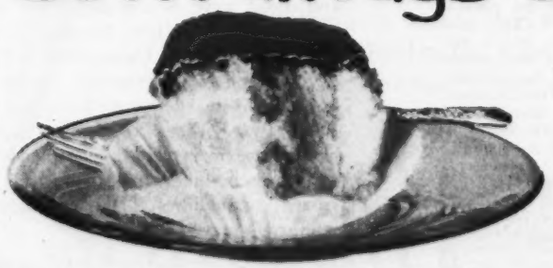
If you want to lose business, and do without,

Use Strawberry Flavor

whose taste fades out.

NORDA Flavors don't fade out,

So... always come to NORDA



Want to *do* business, or do *without* business?

Watch your flavors, or your customers may fade away. Use Norda Flavors. They last. They stay true. They bring business to you. Get *free samples* by sending your business letterhead.

Use a Norda "Favorite to Flavor It" Norda

Norda, Inc., 601 West 26th Street, New York 1, N. Y.

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When inquiring check FP 1681 on handy form, pgs. 2-3

味の素

Add Flavor Magic with AJI-NO-MOTO

Over the years, leading chemists and production managers for well-known food processors have used this vital seasoning to assure perfect and unique flavor in their food products. That seasoning is world-famous AJI-NO-MOTO.

Their flavor secret can be yours . . . when you use AJI-NO-MOTO, the priceless ingredient that intensifies the true flavor of canned, packaged or frozen foods.

A pure vegetable product. AJI-NO-MOTO is highly concentrated and economical to use. Safe with any foods, in any climate . . . and it does not conflict with dietary restrictions. Use the favorite of food processors everywhere — use AJI-NO-MOTO!

The Original Mono Sodium Glutamate 99+% pure

For information write:

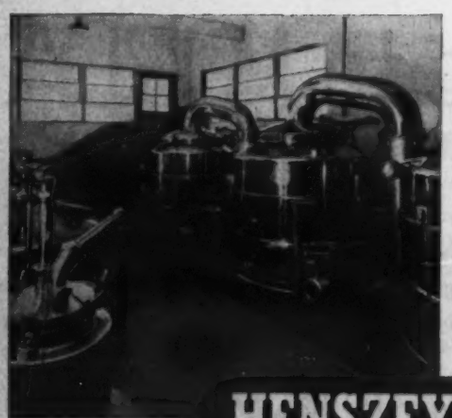
AJINOMOTO CO., INC.
30 Broad Street, New York 4, N.Y.

MADE EXCLUSIVELY BY AJINOMOTO CO., INC., TOKYO, JAPAN

When inquiring check FP 1682 on handy form, pgs. 2-3

Evaporating or Condensing?

it's performance that counts



HENSZEY TRIPLE EFFECT EVAPORATOR

Here are the results of keen, accurate planning with Henszey experts supervising each engineering detail and working closely with the plant's engineering staff. The picture speaks for itself; yet there's even more than meets the eye. Besides the extreme sanitation and compactness of this Henszey installation, the operating efficiency of this 3 Effect unit is unequalled. It uses Vapor Preheaters, Automatic Feed Valves, Chill Rings, Henszey 2 Stage Centrifugal Separation, and many other features.

HENSZEY

Dept. F
HENSZEY COMPANY
Watertown, Wisconsin

We shall appreciate your inquiry. Our engineers are available at all times to give immediate attention to your particular plant problems.

Also Manufacturers of: Vapor and Steam Preheaters • Hot Wells • Continuous Blowdown Feed Water Meters • Heat Exchangers • Flow Indicators • Boiler Feed Regulators • Proportioning Valves

When inquiring check FP 1682A on handy form, pgs. 2-3

(*Continued from page 5*)

entire increase in margin. The remaining six plants increased their profits by amounts ranging from 29 to 100 percent of the total increased margin."

The committee noted that in previous studies increases were attributed to higher wages, transportation, and tax rates. This, however, "was not borne out by an actual examination of records," the committee reported.

Another proposal due for a look is that made by the National Milk Producers Federation under which dairy farmers would finance and manage their own price support, production stabilization and marketing programs.

The study of the dairy situation will get under way shortly after a report is received by Congress from USDA on methods of controlling surplus production and price supports. The report was due January 3, under the terms of legislation passed during the 83rd Congress.

Connecticut readying laws for frozen foods distribution, transportation, storage

Connecticut is the first in what could be a parade of states moving to improve what food and drug officials consider unsatisfactory practices in transportation and storage of frozen foods.

A law was passed at the last session of the Connecticut General Assembly which authorizes the state's Food and Drug Commission to issue regulations designed to correct conditions in the distribution, transportation, and storage of frozen food products.

The Connecticut regulations are now being drafted and could serve as a model when finally issued for other states to follow. Harold Clard, chief of the Food Division of Connecticut's Food and Drug Commission said recently: "Some of those who have been awarded franchises do not seem to be fully aware that the frozen commodities they handle are extremely perishable and that extreme care must be taken in transporting and storing the frozen commodities if the original quality is to be retained."

He added: "From the survey conducted so far, it appears that zero degree temperature is ideal for storing quick frozen foods in wholesale warehouses and, further that transportation of frozen foods should be such that there would not be any great change in the internal product temperature of the commodity. Of course, some means of refrigeration must be provided during the time commodities are being transported."

FOAM'S A THIEF

KILL IT *with* DOW CORNING ANTIFOAM AF EMULSION

Now you're the boss! Foam no longer dictates productive capacity, output or processing times as witness these examples:

- ***strawberry concentrate cooling time reduced 25%.***
- ***dairy saves 300-400 gallons of skimmed milk daily.***
- ***yield on textile vat dyes doubled.***
- ***vacuum concentration capacity increased 60%.***

Effective at remarkably low concentrations against the widest variety of foamers, Dow Corning Antifoam A and the more easily dispersed Antifoam AF Emulsion are physiologically harmless; pay for themselves many times over because they • ***eliminate the waste and fire hazard of boil-overs*** • ***reduce processing times*** • ***save the space previously wasted on foam in process equipment***

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mail coupon TODAY for **free sample**

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Please send me data and a free sample of
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or ☐ Dow Corning Antifoam AF Emulsion

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CITY_____ ZONE____ STATE____

When inquiring check FP 1683 on handy form, pgs. 2-3

Protein-boosting amino acid available for fortifying flours, infant foods

Lysine, an amino acid essential to human nutrition, is now being produced synthetically by the du Pont company in semi-commercial quantities. The Electrochemicals Department of the company has established pilot plant facilities at Niagara Falls, N.Y. for producing L-lysine monohydrochloride. This product is the naturally occurring form in which it is most easily assimilated. Many foods, notably those based on wheat, are deficient in lysine, and interest in the additive is expected from the baking industry. A specialty bread containing this protein-fortifying additive is expected to be marketed in a few cities soon.

Lysine is one of eight amino acids considered essential to human nutrition. The amino acids must be in the right proportion for the body to receive full benefit from proteins.

Tests have shown that adding two-tenths of a per cent of L-lysine to wheat flour boosts the protein value of bread from 70 to 100%. Work by Dr. A. A. Albanese at a Greenwich, Conn. hospital, indicates that marked improvement in the growth rate and blood characteristics resulted for two-thirds of a group of 15 normal infants fed lysine-fortified milk.

His findings, Dr. Albanese said, suggest that the nutritional value of many infant foods, including cow's milk, can be improved by small amounts of lysine. The pharmaceutical industry will offer lysine-fortified supplements for infant formulas soon.

(Darvyl L-lysine monohydrochloride is available from E. I. du Pont de Nemours & Co., Electrochemicals FP Department, Wilmington 98, Del. . . . or for more information check FP 1684, pages 2 and 3.)

Advertising "cream in margarine" passes initial FTC hurdle

First round in battle over margarine advertising has been won by the margarine producers. Two Federal Trade Commission Hearing Examiners have issued initial decisions recommending dismissal of complaints charging Reddi-Spred Corp., Philadelphia, and Blanton Co., St. Louis, with attempts to mislead consumers into believing that their products were dairy products.

The Reddi-Spred Corporation is said to have used words like "butter" and "real fresh butter" to misrepresent that margarine is a dairy product. The Blanton Co. used the word "Creamo" and such statements as "why don't you taste the difference that cream makes", "contains five percent light cream" and "blended with sweet fresh cream."

The hearing examiner in the Reddi-Spread Case said

(*Continued on page* 14)

Want to put LEGS on your FROZEN FOOD SPECIALTY?

Clam chowder or spaghetti and meat balls need a different packaging look. New plastic-impregnated Sealright paper containers give your frozen food specialty a "fresh flavor" look. They're the easy answer to your hard-to-package product. And see how fast they move when you put them in neat, colorful containers with "See-thru" covers. Sealright Sales Packaging meets any packaging requirement — easily adaptable for manual packaging or high speed filling equipment.

Sealright

SEALRIGHT SANITARY SERVICE for Your Protection

Plastic Protected Paper Containers

Oswego Falls Corp.—Sealright Co. Inc., Fulton, N. Y., Kansas City, Kansas—Sealright Pacific, Ltd., Los Angeles, California—Canadian Sealright Co., Ltd., Peterborough, Ontario, Canada.

SEALRIGHT CO. INC., Fulton, N. Y. FP551

Please send me some samples and more information on Sealright's newest idea in paper packaging for frozen food.

NAME .....

COMPANY .....

ADDRESS .....

CITY ..... ZONE ..... STATE .....

When inquiring check FP 1685 on handy form, pgs. 2-3

STOP THE THREAT OF CORROSION WITH TRUSCON "Speed Rex"

Provides Tough, Resistant Paint Film For Metal, Wood And Concrete Surfaces

You can lick the corrosion problems caused by condensation with "Speed Rex" . . . the *toughest* all-purpose coating you can find for machinery, tools, conveyors, benches, guard rails and most other plant equipment.

And "Speed Rex" resists *hard knocks* as well as chemicals and moisture. You paint less often when you standardize on "Speed Rex" because rough, tough physical abuse bounces off the rugged hide of this protective coating.

The reason "Speed Rex" can take so much punishment is Devran . . . an Epoxy Resin that gives paint greater wear-ability and resistance to corrosive chemicals.

It's Alive! It's Devran!

If you were to bounce a solid ball of Devran, or drive it with a golf club, you'd see how "alive" it is. It's this *lively toughness* that enables Speed Rex to bounce back after absorbing the roughest kind of industrial treatment. Get the full details on work-saving Speed Rex from your Truscon Sales Engineer. Or write for literature . . . now!

Maintenance Problem? TELL IT TO TRUSCON!

TRUSCON Laboratories
Division of Devoe & Raynolds Co., Inc., Detroit 11, Michigan

When inquiring check FP 1686 on handy form, pgs. 2-3

key to exhibitors at

PLANT MAINTENANCE SHOW

International Amphitheatre

Chicago, Illinois
January 24-26

SAFETY AND PERSONNEL PROTECTION

fire control, hygiene and first aid, non-skid mats, belts, clothing, goggles and masks, etc.

Company	Booth
American Hand Dryer Corp.	217
Amer. Abrasive Metals Co.	636
John Bean Div., Food Mach. & Chem. Corp.	829
Bemis Bro. Bag Co.	158
Bradley Washfountain Co.	137
W. H. Brady Co.	733
Canfield Oil Co.	233
du Pont, Rubber Chem. Div.	528, 532, 534, 536, 540
Embosograf Corp.	879
The Globe Co.	739
Graton & Knight Co.	159
Huntington Laboratories, Inc.	634
Industrial Garment Service	749
Martindale Electric Co.	262
Mine Safety Appliances Co.	333
Minneapolis-Honeywell Regulator Co., Industrial Div.	525
G. H. Packwood Mfg. Co.	711
J. D. Polis Mfg. Co.	173, 175
The Protectoseal Co.	674
Rohm & Haas Co.	348
Ruemelin Mfg. Co.	261
Sico Mfg. Co.	192
Steel Sash Service Inc.	738
Steiner Sls. Co.	361
Sugar Beet Products Co.	626
Westline Products Div., Western Lithograph Co.	731

HEATING, POWER GENERATION & TRANSMISSION

motors, wiring, circuit breakers, ventilation equipment, humidifiers, steamtraps, boilers, insulation materials, safety switches, motor control center and busways, V-belts, etc.

Company	Booth
Louis Allis Co.	407
Armstrong Mach. Works	732, 734
W. M. Bashlin Co.	128
Bemis Bro. Bag. Co.	158
Boston Gear Works	830
Browning Mfg. Co.	139
Buchanan Elect. Prod. Corp.	758
Philip Carey Mfg. Co.	548
Complete Reading Elect. Co.	719
Crane Co.	469
Dayton Rubber Co.	633, 635
The Flexaust Co.	308
Flexible Tubing Corp.	550
Benjamin Foster Co.	275
Furnas Electric Corp.	622
General Electric Co.	606-613
The Globe Co.	739
Graton & Knight Co.	159
C. O. Henriksen Co.	572
Homelite Corp.	820
Insto-Gas Corp.	227
Insul-Mastic Corp. of Am.	133
Johns-Manville Sls. Corp.	825, 827
Joy Mfg. Co.	385, 387, 389
McGill Mfg. Co., Inc.	761
The Miller Co.	824
Nat'l Industrial Serv. Assn.	817
Ohio Carbon Co.	191
The Okonite Co.	219, 221
Owens-Corning Fiberglas Corp.	326
J. E. Rhoads & Sons	574
Rome Cable Corp.	680, 682
Sarco Co., Inc.	497
Sellers Injector Corp.	111
Simplex Wire & Cable Co.	751
Steel Sash Service Inc.	738
Sylvania Elect. Prod. Inc.	420
U. S. Electrical Motors Inc.	235, 237
Wagner Electric Corp.	197
Westline Prod. Div., Western Lithograph Co.	731
Westinghouse Electric Corp.	508, 514, 520

LUBRICATION

systems and supplies, valves, fittings, etc.

Company	Booth
Alemite Div., Stewart-Warner Corp.	710, 712, 714
Aro Equipment Corp.	250, 254
Commercial Filters Corp.	705
De Laval Separator Co.	687
Du Bois Co.	566
Eagle Mfg. Co.	228
The Farval Corp.	339
Lubriplate Div., Fiske Bros. Refining Co.	375
Gulf Oil Corp.	414
Hansen Mfg. Co.	725
Hills-McCanna Co.	267
Huntington Laboratories, Inc.	634
Imperial Brass Mfg. Co.	669
C. A. Norgren Co.	314
Shell Oil Co.	562, 564
Socony-Vacuum Oil Co.	244, 343
Tower Oil Company	856

Who may register: All industry personnel are invited to the Plant Maintenance and Engineering Exposition (free registration). To attend accompanying conference fee of $20 is required (includes one copy of proceedings). Advance registration information is available from Clapp & Poliak, Inc., Dept. FP, 341 Madison Ave., New York 17, N. Y.

This list of exhibitors is as accurate as it is possible to prepare at press time. For last minute changes, the reader should contact Clapp & Poliak at above address.

PLANT HOUSEKEEPING

flooring and floor maintenance, cleaning materials and equipment, masonry and resurfacing materials, walls, refuse disposal, grating, shelving, windows and doors, lighting, water heaters and coolers, dampeners, dust collectors, lawn maintenance, etc.

Company	Booth
Acme Steel Co.	661, 663
Alan Wood Steel Co.	335
American Floor Surfacing Machine Co.	755
American-Olean Tile Co.	878, 880
American Wheelabrator & Equip. Corp.	854
Bemis Bro. Bag Co.	158
Benjamin Electric Mfg. Co.	248
Breuer Electric Mfg. Co.	713, 715
Brulé Incinerators	178
Canfield Oil Co.	233
Philip Carey Mfg. Co.	548
Clark Door Co., Inc.	109
Clements Mfg. Co.	671
Corrulux Div., Libbey-Owens-Ford Glass Co.	843
Crane Co.	469
Crawford Door Co.	487
Detrex Corp.	834
Dowell Inc.	554
Doyle Vacuum Cleaner Co.	210
Du Bois Co.	566
Eagle-Picher Co.	225
Equipto Div., Aurora Equip.	797
Eriez Mfg. Co.	305
The Felters Co.	301
Finnell System, Inc.	413
Flexrock Co.	292
Geerpres Wringer, Inc.	249
The Globe Co.	739
Hild Floor Mach. Co.	461
Homestead Valve Mfg. Co.	833
Huntington Laboratories, Inc.	634
Hydraulic Mfg. Co.	754
Ideal Industries, Inc.	370
Industrial Sweeper Co.	202
Inertol Inc.	247
S. C. Johnson & Son, Inc.	222
Kalman Floor Co., Inc.	729
The Kent Co., Inc. 211,	213
Kollmann Mfg. Co.	431
Walter G. Legge Co., Inc.	327
Lien Chemical Co.	752
Lincoln-Schlueter Floor Mach. Co. 744,	746
David Linzer & Sons Inc.	656
Little Giant Prod., Inc.	840
Walter Maguire Co., Inc.	578
Martindale Electric Co.	262
Master Builders Co.	757
Modern Power Sweeper Co.	493
Mult-A-Frame Div., Ainsworth Mfg. Corp. 582,	586
Multi-Clean Prod., Inc.	832
Municipal Supply Co.	202
Oakite Products Inc.	644
Overhead Door Corp.	388
G. H. Packwood Mfg. Co.	711
Parker Sweeper Co.	740
Patent Scaffolding Co., Inc.	640
Permamix Corp.	355
Plasteel Prod. Corp.	125
Proctor & Schwartz, Inc.	767
Protectoseal Co.	674
Resolite of Northern Ill.	763
H. H. Robertson Co.	519
Rohm & Haas Co.	348
Roseman Mower Corp.	727
Safway Steel Prod. Inc.	362
Sellers Injector Corp.	111
A. O. Smith Corp.	686
Spencer Turbine Co.	331
Standard Dry Wall Prod. Inc.	896
Star Expansion Bolt Co.	353
Steel Sash Service Inc.	738
Sugar Beet Products Co.	626
Sunroc Co.	818
Swivelier Co., Inc.	662
G. H. Tennant Co. 425,	427
Thomas Flex. Coupling Co.	435
Tile-Tex Div., Flintkote Co.	432
Torit Mfg. Co.	675
The Tremco Mfg. Co.	113
Turco Prod., Inc.	451
Unistrut Prod. Co.	485
U. S. Hoffman Mach. Corp., Filtration Div.	643
United States Steel	531
West Disinfecting Co.	325
Wilshire Power Sweeper Co.	639
Woodbridge Ornamental Iron Co.	839

MATERIALS HANDLING

conveyors, hand and lift trucks, hoists, slings, cranes, belts and fasteners, magnets, casters, wheels, racks, etc.

Company	Booth
Aerol Co., Inc.	230
Allied Mfg. & Sls. Co. 118,	120
Allis-Chalmers, Tractor Div. 444,	450
American Chain & Cable Co. 378,	382
Aro Equipment Corp. 250,	254
Barrett-Cravens	588
The Bassick Co.	365
Big Joe Mfg. Co.	539
The Buda Co.	458
Chisholm-Moore Div., Columbus-McKinnon Corp.	836
Clark Equip. Co., Industrial Truck Div. 354, 358, 453,	457
Cleveland Worm & Gear Co.	339
Coffing Hoist Co.	243
The Colson Corp.	392
Cushman Motor Prod., Inc.	268
Dings Magnetic Separator Co.	371
du Pont, Rubber Chemicals Div. 528, 532, 534, 536,	540
Eriez Mfg. Co.	305
The Fairbanks Co.	678
Faultless Caster Corp.	778
Ferguson Mach. & Tool Co., Roller Gear Div.	258
Flexible Tubing Corp.	550
Harnischfeger Corp. 381,	383
Manning, Maxwell, & Moore Inc.	379
The Ohio Carbon Co.	191
Proctor & Schwartz, Inc.	767
The Protectoseal Co.	674
Radio Corp. of Am., RCA Eng. Prod. Div. 253,	255
Rapids-Standard Co., Inc.	426
Remington Arms Co., Inc.	528
The Spencer Turbine Co.	331
W. O. & M. W. Talcott Inc.	730
Templeton, Kenly, & Co.	558
Union Wire Rope Corp.	664
United States Steel	531
Vacu-Blast Co., Inc.	155
Yale & Towne Mfg. Co. 507,	513

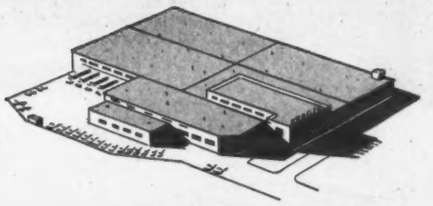
FLUID HANDLING

piping, valves, pumps, filters, controllers, packings, pipe coverings, rotary joints, etc.

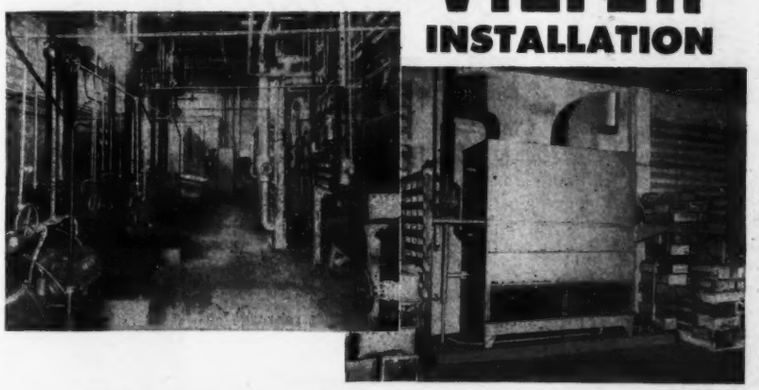
Company	Booth
Aeroquip Corp.	544
Arden Company	231
Armstrong Machine Works 732,	734
Aro Equipment Corp. 250,	254
Bowser, Inc.	570
A. M. Byers Co.	409
Philip Carey Mfg. Co.	548
Crane Co.	469
Cuno Eng. Corp.	543
Delpark Corp.	320
DeZurik Shower Co.	251
du Pont, Rubber Chemicals Div. 528, 532, 534, 536,	540
Durametallic Corp.	720
The Fairbanks Co.	678
Garlock Packing Co.	625
Gates Engineering Co.	143
Graton & Knight Co.	159
Hansen Mfg. Co.	725
Hills-McCanna Co.	267
Honan-Crane Corp. 627,	631
Imperial Brass Mfg. Co.	669
Johnson Corp.	736
Kenco, Inc.	239
The Protectoseal Co.	674
The Ohio Carbon Co.	191
Raybestos-Manhattan Inc. 234,	236
J. E. Rhoads & Sons	574
Sarco Co., Inc.	497
Steel Sash Service Inc.	738
Walworth Co.	487
Westline Prod. Div., Western Lithograph Co.	731

(*Continued on next page*)

Kroger



uses complete VILTER INSTALLATION



The modern new Kroger Company warehouse in Charleston, West Virginia is equipped completely with Vilter refrigeration units—a vote of confidence in Vilter refrigeration. As in a previous Kroger job, this new refrigeration system started operation with a minimum of attention and adjustment . . . a real blessing in getting a new plant off to a "flying" start.

This well-engineered installation consists of three VMC ammonia compressors, each selected for a definite temperature condition and cross-connected for flexibility. The freezer compressor, air conditioning compressor, and storage room compressor of 25, 40, and 50 h.p. sizes balance the specific load requirements of the various sections of the warehouse—including the Banana rooms, dry produce room, wet produce room, dairy cooler, and meat cooler. In addition to the compressors, there are Vilter brine spray-type air units, suction accumulators, evaporative condensers, and controls to complete this custom designed refrigeration installation. Vilter supplied the "complete refrigeration package"... thereby simplifying installation, operation, and maintenance problems.

Vilter understands how to design refrigeration systems to meet the specific needs of the job. That's why Vilter not only provides you with the "right" refrigeration... but knows how to cut down on the amount of costly space and also lower installation and operation costs. Furthermore, "among the men who know," Vilter has earned recognition as having a refrigeration system that keeps on running day in and day out—protecting your investment in meats, food, and produce—and doing so at lower operating and maintenance costs!

Vilter gives you a well-engineered product and a well-engineered installation. For dollar saving ideas and "top" refrigeration equipment consult your nearest Vilter representative.

Vilter.

Your nearby Vilter Representative or Distributor will be glad to show how Vilter refrigeration can help you.

REFRIGERATION and AIR CONDITIONING

THE VILTER MANUFACTURING COMPANY, MILWAUKEE 7, WIS.

Air Units • Ammonia & Freon Compressors • Booster Compressors • Baudelot Coolers • Water and Brine Coolers • Blast Freezers • Evaporative & Shell & Tube Condensers • Pipe Coils • Valves & Fittings • Pakice and Polarflake Ice Machines

When inquiring check FP 1687 on handy form, pgs. 2-3

REDUCE YOUR
PROCESSING COSTS
WITH
LEE
EQUIPMENT
✓ CORROSION-RESISTANT
Built from time-proved stainless steel
✓ WIDE RANGE OF SIZES
To fit your exact requirements
✓ INDIVIDUALLY DESIGNED
To meet your specific processing operation
✓ PRECISION-BUILT
To give you long years of peak performance
✓ LOW MAINTENANCE
Easy to clean and keep clean
Our technical bulletins describe this equipment in detail.
Write for them today!
LEE
METAL PRODUCTS CO., Inc.
414 Pine Street, Philipsburg, Pa.
ALL LEE KETTLES ARE MADE TO A.S.M.E. CODE
Mixing Tank 25 to 500 gal.
Pulp Tank 500 to 2,000 gal.
Storage Tank 100 to 5,000 gal.

When inquiring check FP 1688 on handy form, pgs. 2-3

plant maintenance show

(Continued from preceding page)

SHOP TOOLS FOR MAINTENANCE & INSTALLATION

detection-testing-alarm devices, lathes, welding, hardware, hydraulic pipe, conduit binding machines, hose clamps and fittings, ladders, scaffolds, power and hand tools, etc.

Company	Booth
Allied Mfg. & Sls. Co.	118, 120
Am. Floor Surfacing Mach. Co.	755
American Pulfmax Co., Inc.	709
Aro Equipment Corp.	250, 254
Arro Expansion Bolt Co.	220
Band-It Co.	419
Barce Mfg. Co.	208
W. M. Bashlin Co.	128
Beaver Pipe Tools, Inc.	357
James G. Biddle Co.	393
Bil-Jax, Inc.	126
Black & Decker Mfg. Co.	372, 374
Blackhawk Mfg. Co.	743
Clipper Mfg. Co.	658
DeVilbiss Co.	334, 336
DeWalt, Inc.	153
Diamond Expansion Bolt Co.	735
Eriez Mfg. Co.	305
Frommelt Industries	288
Gaines-Collins, Quijada Tool Div.	470
Greenlee Tool Co.	415
Heli-Coil Corp.	647
Imperial Brass Mfg. Co.	669
Insto-Gas Corp.	227
Louisville Ladder Co.	369
Mall Tool Co.	162
Martindale Electric Co.	262
Milwaukee Electric Tool Corp.	722
Minneapolis-Honeywell Reg. Co., Industrial Div.	525
Nye Tool Co.	857
The Ohio Carbon Co.	191
Oster Mfg. Co.	526
Patent Scaffolding Co., Inc.	640
Phillips Drill Co.	779
J. D. Polis Mfg. Co.	173, 175
Powder Power Tool Co.	269
The Protectoseal Co.	674
Punch-Lok Co.	648, 650
Reed Mfg. Co.	762, 764
Remington Arms Co., Ltd.	528
Remington Rand Inc.	479, 483
The Ridge Tool Co.	619
Ruemelin Mfg. Co.	261
Sico Mfg. Co.	192
The Sittler Corp.	215
Skil Corp.	179
Sperry Products, Inc.	775
Stanley Elect. Tool Div.	861
Thor Power Tool Co.	279
Thread-Ezy Mfg. Co.	654
Tilden Tool Mfg. Co.	707
Toledo Pipe Threading Mach. Co.	344
Trig-O-Matic Tool Corp.	774, 776
Up-Right Scaffolds	443
Utica Drop Forge & Tool Corp.	652
Walworth Co.	487
Westinghouse Electric Corp.	508, 514, 520

CORROSION PREVENTION

water treatment, descalers, coatings, paints, etc.

Company	Booth
Arco Company	790, 792
Atlas Mineral Prod. Co.	692
Barreled Sunlight Paint Co.	307
Binks Mfg. Co.	366
Philip Carey Mfg. Co.	548
The Dampney Co.	350
Detrex Corp.	834
Dowell Inc.	554
Du Bois Co.	566
du Pont, Rubber Chem. Div.	528, 532, 534, 536, 540
Benjamin Foster Co.	275
Gates Engineering Co.	143
The Glidden Co.	310
Inertol Inc.	247
Insul-Mastic Corp. of Am.	133
Keystone Lubr. Co.	141
Koppers Co., Inc.	653, 657
Lincoln Engineering Co.	628, 630
Oakite Products Inc.	644
Pittsburgh Coke & Chem. Co.	679
Rohm & Haas Co.	348
Rust-Oleum Corp.	347
Shell Oil Co.	562, 564
Standard Dry Wall Prod. Inc.	896
Structural Waterproofing Corp.	433
The Tapecoat Co.	716
Tnemec Co., Inc.	670
The Tremco Mfg. Co.	113
Western Waterproofing Co.	302
Wilbur & Williams Co.	309

OTHER EXHIBITORS

and those not classified at press time

Company	Booth
Acorn Paper Co.	616
Aget Mfg. Co.	793
Airkem, Inc.	668
Atkomatic Valve Co., Inc.	728
The Barry Corp.	828
Best Universal Lock Co.	766
Best's Safety Publications	122
Canton Containers, Inc.	214
Central Ironite Co.	302
Clarin Mfg. Co.	240
Conover-Mast Publications	340
Detroit Steel Products Co.	718
The du Mont Corp.	496
Dura-Tred Inc.	176
The Ebco Mfg. Co.	860
Electrical Const. & Maint.	110
Encyclopaedia Britannica	127
Factory Management & Maint.	319, 321
Femco, Inc.	822
Fence Painter Corp.	278
Flex-O-Tube, Div. Meridan Corp.	274
Flowstrut Corp.	683
The Garland Co.	769
Elof Hansson Inc.	620
Harris-Barrier, Inc.	768
Hayden-Shaw Mineral Prod.	229
Helwig Co.	717
Industrial Equip. News	329
Industrial Filtration Co.	320
Ind. Maint. and Plant Op.	597
International Business Mach. Corp.	471, 475
Jarvis & Jarvis, Inc.	246
The Korfund Co., Inc.	206
Laduby Co., Inc.	144
Larsen Prod. Corp.	892
Lightfoot Schultz Co.	765
Loomis Machine Co.	463
Luminous Ceilings Inc.	212
Maintenance Magazine	809
Malsbary Mfg. Co.	263
Manheim Mfg. & Belting Co.	614
Markal Co.	819, 821
Minnesota Mining & Mfg. Co.	811, 813
Modern Sanitation	401
Molco Grilling Mach., Inc.	848
New Equipment Digest	672
New Hermes Engraving Mach. Corp.	257
Oberdorfer Foundries, Inc.	667
O'Brien Mfg. Co.	226
Plant Engineering	601
Porter-Cable Machine Co.	138
Ramset Div., Olin Ind., Inc.	726
Rocket Devices Corp.	351
Rotherm Engr. Co., Inc.	748
Safeway Ind. Equip. Corp.	364
A. Schrader's Son Div.	328, 332
Simonez Co.	232
Simplaire	548
Speedi-Dri Corp.	447
Telautograph Corp.	146
Thomas Publishing Co.	329
Titeflex, Inc.	750
Tool Steel Gear & Pinion Co.	129
Tricop Co., Inc.	815
United Machinery Sls. Co.	140
Universal Mfg. Corp.	245
Veeder-Root, Inc.	893
Waverly Petroleum Prod. Co.	447
The Weatherhead Co.	311, 313, 315
Wright Chemical Corp.	756
Norman Wright Productions	367

OTHER EQUIPMENT AND SUPPLIES

infrared ovens, control systems, weed control chemicals, communication equipment, personnel transportation, prefabricated buildings, etc.

Company	Booth	Company	Booth
Ajusto Equipment Co.	183	McCaskey Reg. Div., Victor Adding Mach. Co.	117, 121
Automatic Electric Sls. Corp.	688	Motorola Communications & Electronics, Inc.	349
Cushman Motor Prod., Inc.	268	Radio Corp. of Am., RCA Eng. Prod. Div.	253, 255
Dresser-Ideco Co.	216	Royal Metal Mfg. Co.	753
du Pont, Grasselli Chem. Dept.	528-540	Sico Mfg. Co.	192
Electric Cord Co.	747	Stanley Works	651
Howe Folding Furniture Inc.	114		
Jenson Specialties Inc.	130, 132		

Food processing will be one of five industries receiving special individual attention at the conference to be held during the Plant Maintenance and Engineering Show. Two of the sixteen roundtables will be devoted to maintenance in food processing plants.

Among topics listed for the eight concurrent sessions are: "Sanitation", "Materials Handling Equipment Used in Maintenance," and "Work Measurement and Work Standards."

Scheduling of conferences and exhibition will enable visitors to attend both during non-conflicting hours.

Convention & Exhibit Schedule 1955

Jan. 24-27. Plant Maintenance & Engineering Show, International Amphitheatre, Chicago, Ill.

Jan. 24-28. National Potato Chip Institute, Hotel Sherman, Chicago, Ill.

Feb. 11-13. Fact Finding Conference and Exposition of the Institute of American Poultry Industries, Municipal Auditorium, Kansas City, Mo.

Feb. 14-16. Canadian Food Processors Association, Annual Convention, Seigniory Club, Montreal, P. Q.

Feb. 14-23. National Canners Association, Annual Convention and Exposition, Conrad Hilton Hotel, Chicago, Ill.

Feb. 22-24. Technical School for Pickle and Kraut Manufacturers, Kellogg Center, Michigan State College, East Lansing, Mich.

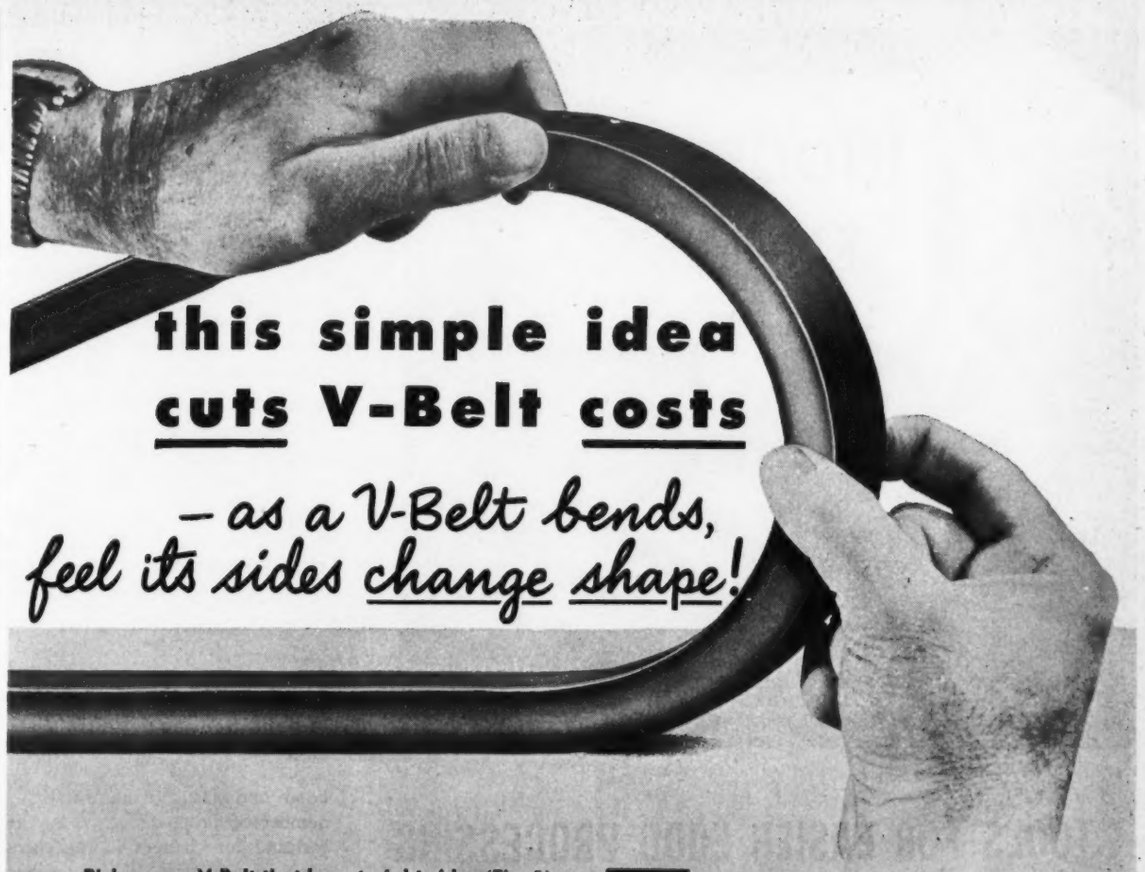
Mar. 7-10. American Society of Bakery Engineers, Edgewater Beach Hotel, Chicago, Ill.

Mar. 8-9. National Dairy Engineering Conference, Kellogg Center, Michigan State College, East Lansing, Mich.

Mar. 13-17. Frozen Food Industry Meeting and National Association of Frozen Food Packers Convention, Conrad Hilton Hotel, Chicago, Ill.

Mar. 29-*Apr.* 7. The 127th National Meeting of the American Chemical Society, Cincinnati, Ohio.

Apr. 18-21. National Packaging Exposition, International Amphitheatre, Chicago, Ill.



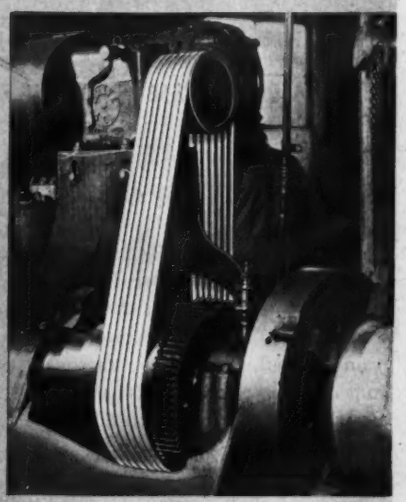
this simple idea cuts V-Belt costs

— as a V-Belt bends, feel its sides change shape!

Pick up *any* V-Belt that has straight sides (Fig. 1) and bend it as if it were going around a pulley. At the same time, *grip its sides* with your fingers! You will feel the sides *bulge out* as in Fig. 1-A. Clearly, the bulging belt is forced to press *unevenly* against the V-pulley—and this concentrates wear at the points shown by arrows (Fig. 1-A).

Now bend the belt with CONCAVE SIDES (U.S. PAT. 1813698) . . . the GATES VULCO ROPE (Fig. 2)

Instead of *bulging*, the precisely engineered CONCAVE SIDES merely *fill out* and become perfectly straight. This belt, when bent, *precisely fits* its sheave groove (Fig. 2-A). The sides press *evenly* against the V-pulley. Therefore, wear is distributed *uniformly* across the full width of the Gates Vulco Rope—and this means longer belt life and *lower belt costs* for you!



Typical Gates Vulco Rope Drive—the Gates V-belts are built with Concave Sides to insure longer belt wear.

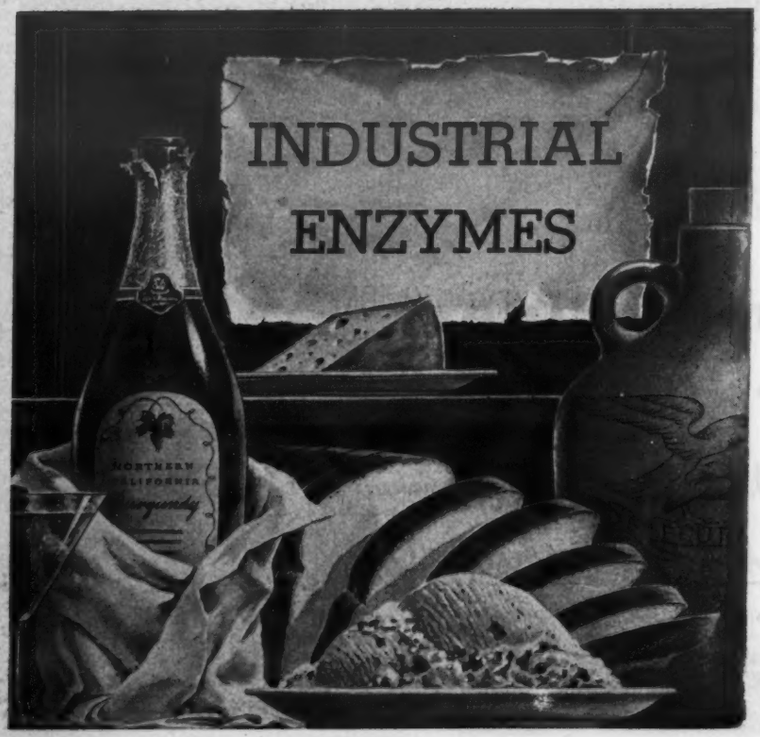
When you buy V-belts, be sure to get the V-belt with the CONCAVE SIDES — the Gates Vulco Rope!

VULCO ROPE DRIVES

THE GATES RUBBER COMPANY
DENVER, U.S.A.
CG-5411

Gates Engineering Offices and Jobber Stocks are located in all industrial centers of the United States and Canada, and in 70 other countries throughout the world.

When inquiring check FP 1689 on handy form, pgs. 2-3



...TOOLS FOR EASIER FOOD PROCESSING

(the added Sales Appeal comes free)

PECTINASE • DIASTASE • PROTEASE • LACTASE • CELLULASE • LIPASE

Rohm & Haas industrial enzymes are valuable tools for the food technologist. Besides their long-established use in wine making and fruit juice clarification, they've become important in other ways: they tenderize meats, improve texture and grain of bread, produce sweet syrups from corn starch. They also permit the use of higher concentrations of skim milk in ice cream without danger of "sandiness".

In contrast to many chemicals, Rohm & Haas industrial enzymes are *natural* products, which catalyze *specific* reactions and prevent undesirable side-reactions. A little enzyme goes a long way toward increased process efficiency, toward big gains in sales appeal.

Write to Dept. SP for complete technical information

CHEMICALS FOR AGRICULTURE

ROHM & HAAS COMPANY

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

Representatives in principal foreign countries

When inquiring check FP 1690 on handy form, pgs. 2-3

(Continued from page 9)

that Section 15 of the Federal Trade Commission Act recognizes the right of margarine manufacturers to state what ingredients are contained in oleomargarine including certain quantities of milk and cream. He said that the law does not deny the company the right to set out one ingredient independently of the others. And he added that the company had the right to state truthfully that its product contains butter. He also said that advertising used the word "oleomargarine" prominently and that a person who considered them could not be deceived.

In the second case, the hearing examiner said that the questioned advertising clearly showed that the product is oleomargarine. He added that the spread contains substantial quantities of skim milk and US standard cream.

Neither decision is final yet. A hearing examiner's initial decision may be stayed, docketed for review by the full Commission, or appealed.

Changes in cheese standards — of definitions and bleaching milk — under consideration

Food and Drug Administration is considering a number of proposals made by the National Cheese Institute for changes in the cheese standards. One series of proposals deals with changes in the definitions and standards relating to Munster cheese, Monterey cheese, and pasteurized process cheese foods and spreads.

The second series deals with the possibility of bleaching milk used for the making of several varieties of cheese. Permission is also being asked to artificially color Swiss cheese.

FDA has published the proposals for amendment of the definitions and standards constituting the first series. All comments were due December 27. However, in the second series relating to permission to bleach milk, FDA said additional information was wanted from the Institute "as to the facts that warrant a conclusion that such proposals would promote honesty and fair dealing in the interest of the consumers."

Pamphlet lists gov't-owned patents on food processes

A new publication containing 265 abstracts or brief descriptions of government-owned inventions applicable to food is now available. The book "Food Products and Processes" may be obtained for $1.00 per copy from the Office of Technical Services, Commerce Department, Washington, D. C.

Listings in book are classified in 15 groups: meat

Diamond Crystal Alberger Salt is

America's largest-selling High-Grade* salt

because...

the exclusive Diamond Crystal Alberger System produces:

Purity—99.95% Sodium Chloride.

Uniformity—maximum purity variation ±0.01% . . . screened to a standard for each food product.

Cleanliness—lowest insolubles of any commercial grade of salt.

Low heavy metals—less than 1.5 part per million of pro-oxidants copper or iron.

**The premium grade salt used by food processors.*

FOOD TECHNOLOGIST AT YOUR SERVICE

For free consultation on choice and application of the right salt for your food products—call, wire or write:

Technical Service Dept. A
Diamond Crystal Salt Co.
St. Clair, Michigan
Phone—296

When inquiring check FP 1691 on handy form, pgs. 2-3

products, dairy products, fruit and vegetable products, grain products, sugar, confectionery, beverages, leavening compounds, fats and oils, starches, flavoring extracts and fruit juices, pectin derivatives, food processing machinery and apparatus. The patents are normally available to the public on a royalty-free non-exclusive basis.

USDA Grade Standards

Checklist of new or proposed grade standards issued by USDA follows. Except where noted, complete texts can be secured from USDA, Fruit and Vegetable Branch, Processed Division, Washington 25, D.C.

Strawberries, Frozen: Proposed revision would combine into one standard the present standards for Grades for manufacturing and for Grades not for manufacturing, in effect since May 1, 1949. Additional Grade (C) added to US Grades Fancy, Choice, and Substandard. Comments invited until Feb. 14.

Peas and Carrots, Frozen: New standards are proposed providing for three grades, A, B, C, and Substandard. Comments invited until Jan. 17.

Eggs: Proposed changes in shell egg standards and grading regulations established requirements for facilities and operating standards with respect to grading and packing, prescribes form of grade mark and makes some minor changes. Weight classes also changed. Changes in weight classes and facility and operating requirements would not go into effect until Jan. 1, 1956. Other minor changes would become effective in 1955.

Poultry: Proposed changes in voluntary inspection and grading of poultry would provide a definition for poultry parts to facilitate approval of labels. Other proposed changes deal with chilling, freezing, and draining of poultry prior to packaging as well as the lining of containers. Quality standards are also to be changed, with changes applying primarily to Grade B and C ready-to-cook poultry. Comments were due on Jan. 5.

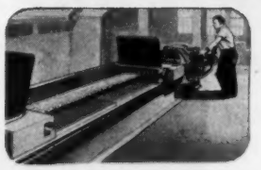
USDA — Meat Inspection

Under a new ruling by the Meat Inspection Branch, USDA, materials identified as approved sugars shall not be used in excess of 2% in such meat food products as sausage, hamburger, meat loaf, luncheon meat, chopped ham, pressed ham, and the like. There is an exception for sucrose. New ruling supersedes an earlier rule dated Sept. 15, 1954. It became effective December 1.

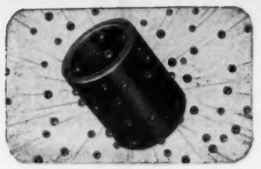
FDA Standards

Cheese: FDA is considering application of National Cheese Institute to amend definitions and standards of identity for Munster, Monterey, and pasteurized process cheese foods and spreads. Comments were due by Dec. 27.

Monosodium Glutamate: The chemical may be added to canned vegetables as an optional ingredient. However, when used, must be identified on label. Effective date was January 5, 1955.



PRE-STRESSING of multiple width chain provides uniform load distribution.



SHOT-PEENED ROLLERS have greater fatigue life, added ability to withstand impact.

CLOSER HEAT-TREAT CONTROL — coupled with rigid testing insures uniformity.

LOCK-TYPE BUSHINGS (applied on a range of sizes) end a cause of stiff chain.

How EXTRAS* like these cut your roller chain costs

*And you pay no premium for these LINK-BELT extras

LINK-BELT Precision Steel Roller Chain meets the three big requirements for lower drive and conveyor costs.

(1) Long life— Added manufacturing refinements like the four shown above are your assurance that Link-Belt roller chain lasts longer.

(2) Low maintenance costs— High resistance to wear eliminates frequent adjustments.

(3) High efficiency — Positive action, independent of atmospheric conditions. No power loss through slippage or excessive bearing friction.

You can get complete information from 148-page Data Book 2457. It covers single and multiple width roller chain and sprockets in ¼" through 3" pitch, 1" through 3" double pitch. Ask your nearest Link-Belt office or authorized stock carrying distributor for a copy today.

LINK-BELT

ROLLER CHAIN & SPROCKETS

LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.

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Industry Notes

- **Personalities — Companies**
- **New Plants — Trade Associations**
- **Technical Societies**

Soft Drink Canners Association, Inc. has been formed with twenty-six charter members. Walter S. Mack, president of C & C Super Corp., has been elected president of the new association which has headquarters at 270 Park Ave., New York City. Mr. Mack stated that with the industry, as a whole, having an expectancy of two billion in retail sales within the next few years, it is in line to anticipate that soft drinks in cans will enjoy about 600 million dollars in sales.

Retail container sizes for frozen fruits and vegetables are reviewed and tabulated in Simplified Practice Recommendations 253-54. These standards, issued by the Department of Commerce, apply to frozen products intended for the retail trade only. Three fruits, seventeen vegetables and recommended net weight content are tabulated. Benefits of simplified practice to producers, manufacturers, distributors, retailers, consumers are listed.

Copies are available from the Superintendent of Documents, U S Government Printing Office, Washington 25, D. C. Price 5c.

Coffee Instants, Inc., 133-23 35th Ave., Flushing, N. Y. recently organized to produce "private label" instant coffees in powder and liquid form, is now established in its new plant. The company is headed by Sol Berg, Leonard Zuckerman, and Sy Mindel.

The Real Gold Company, world's largest processor of California orange base, recently opened its new national headquarters building in Redlands.

Carl L. Piowaty, vice-president, Emulsol Corp., has been elected chairman of the Egg Solids Council, Division of the Institute of American Poultry Industries.

Fermco Chemicals, Inc., Chicago, is now in full production of its enzyme system used in the manufacture of stable dehydrated eggs (egg solids). Don R. Scott, vice-president of the new company was formerly technical director for B. L. Sarett.

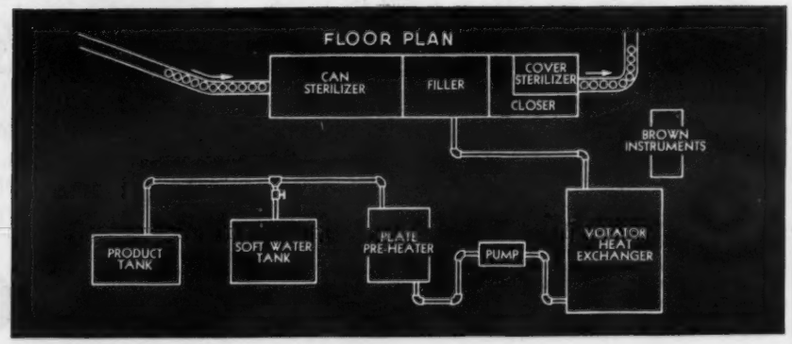
Truck Body and Equipment Association reports that 1954 was as good, or up to 25% better, than '53. New plant facilities were provided with about 5% increase in floor space and about 17.5% increase in manpower. Delivery truck body makers point out that more foods, especially the perishable and refrigerated type, are being distributed in trucks with special bodies.

The 1955 National Frozen Food Convention will be jointly sponsored by the National Association of Frozen Food Packers and the National Wholesale Frozen Food Distributors when they meet in Chicago, March 13-16. Additional participants will include brokers, warehousemen, retail and chain operators, suppliers, and transportation representatives.

The National Frozen Food Exposition will be an im-

Martin Aseptic Canning System in operation at Dairy House Inc., Harvard, Illinois.

NOW PROCESSED WITH



Floor plan showing arrangement of Martin Aseptic Canning System . . . a continuous canning process that automatically fills and seals sterile products in sterile containers in a sterile atmosphere.

W. F. & John Barnes are Exclusive Sales and Service Representatives for the James Dole Engineering Co., Manufacturers of the Martin Aseptic Canning System

W. F. & JOHN BARNES

W. F. & JOHN BARNES COMPANY
PROCESS EQUIPMENT DIVISION
408 SOUTH WATER STREET • ROCKFORD, ILLINOIS

BUILDERS OF BETTER MACHINES

MARTIN ASEPTIC CANNING SYSTEM

At Dairy House Inc., a subsidiary of the Bowman Dairy Company and Bowey's Inc., the Martin Aseptic Canning System is today processing Dari Shake, a delicious chocolate drink, with all the original flavor, color, texture, and nutritive value preserved. Previously, Dari Shake, one of a number of heat sensitive products, could not be canned by conventional methods. Now, with the Martin Aseptic Canning System, tests by Dairy House technologists have proven that the uniformity, flavor, and stability of the chocolate drink is excellent. The Model 60 Martin Aseptic Canning System, illustrated at left, produces 35,000, 8-oz. cans of Dari Shake on a typical 10-hour production run.

A Continuous Canning Process

In operation, the chocolate drink is quickly heated to a temperature of 290° F., held for a few seconds to insure sterility, and is rapidly cooled to 40° F. in a closed heat exchange system. The cans are sterilized in the Martin Unit and then conveyed through the can sterilizer to the filler, ready to receive the cold sterile product. After the cans are filled, they are conveyed in a sterile atmosphere to a closing machine where they receive sterile covers from the cover sterilizer. A slight positive pressure is maintained in the Martin Equipment so that outward flow of sterile gases acts as an efficient contamination barrier. The Martin Aseptic Canning System has now been in operation at Dairy House since 1951 with excellent results. For one 3-month period, it was kept running on a production basis of 24 hours a day, 7 days a week . . . further proof of the dependability of the Martin Aseptic Canning System.

ADDITIONAL DATA

New brochure describes in detail the advantages of canning with the Martin Aseptic Canning System. The Martin System is available in 5 sizes with capacities up to 300 consumer-size cans per minute. Write for your free copy today.

Empty Glass Single Fillers

Carton Uncasers and Recasers

Retort Basket Loaders and Unloaders

Special Conveyors and Elevators

AND EQUIPMENT SINCE 1872

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portant feature of the meeting. For more information concerning the Exposition, write Strauss, Spigler, Kline Corp., Dept. FP, 1809-10 Finance Bldg., Philadelphia 2, Pa. For reservations to Convention, write National Frozen Food Convention, Conrad Hilton Hotel, 720 S. Michigan Blvd., Chicago.

Sharples Corp. invites your inquiries if you have a new machine or process of real merit that requires financing, manufacturing, or selling. Address L P S 2300 Westmoreland St., Philadelphia, Pa.

Gentry (Div. Consolidated Foods Corp.), Los Angeles has announced the following appointments: Lloyd C. Bellisime moves up from vice-president to executive vice-president; Julian L. Hill, comptroller and secretary becomes vice-president-secretary and controller and the position of Arthur N. Prater, vice-president in charge of technical direction is broadened to include the duties of production.

Dorr-Oliver, Inc. is the name of the new company formed by merger of the Dorr Co., Stamford, Conn. and Oliver United Filters, Oakland, Calif. Headquarters of the new organization are in Stamford. Merger became effective Jan. 1.

Henry P. van Ameringen has joined the firm of van Ameringen-Haebler, Inc., New York after serving with the French subsidiary of the company — van Ameringen-Haebler, SARL. Mr. van Ameringen is the son of the president of the company. He is a graduate of Georgetown University with a Bachelor of Science degree in Foreign Trade.

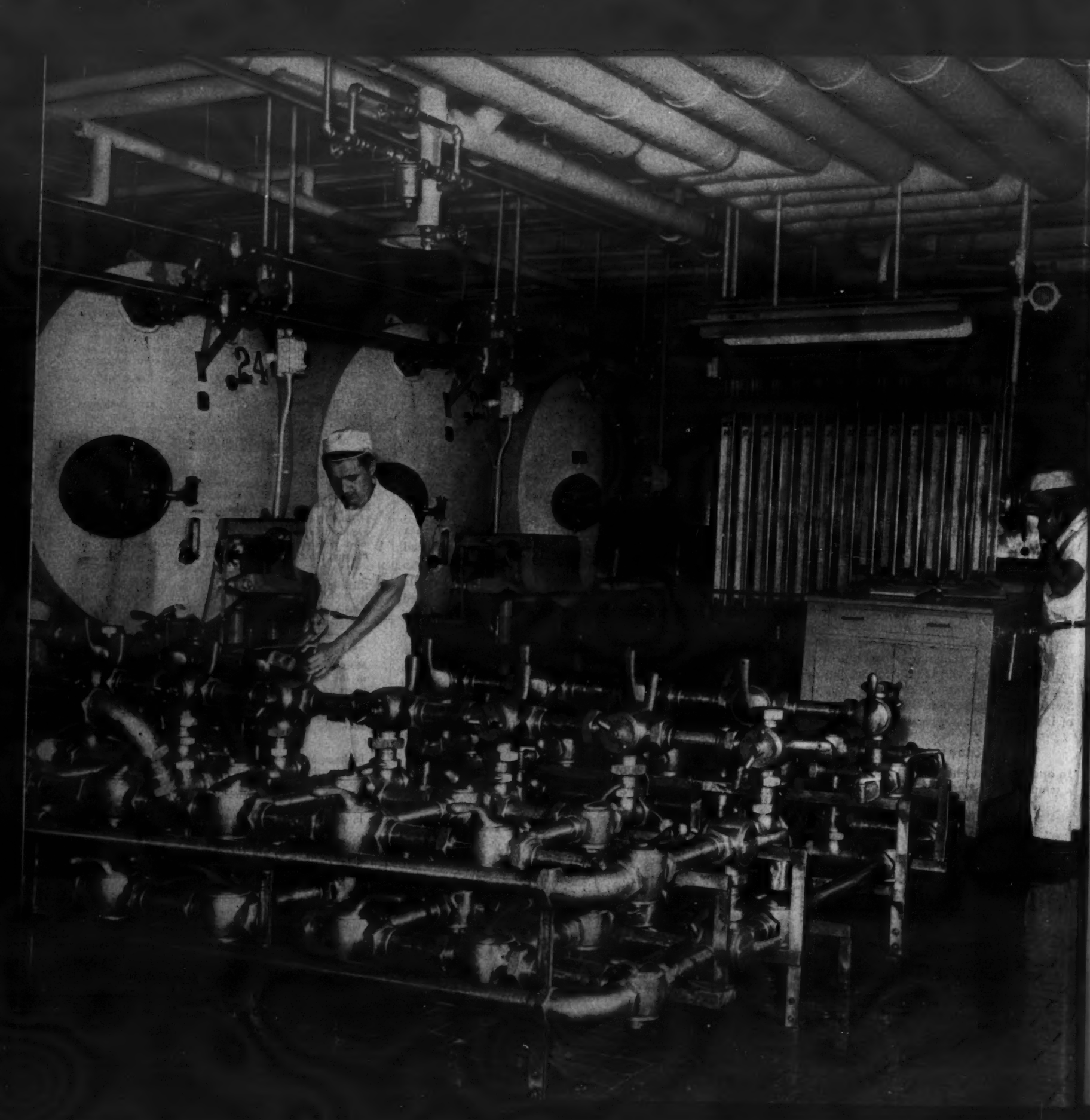
Rietz Mfg. Co., Santa Rosa, Calif. has opened offices in the Forsyth building, Atlanta, Ga. from which sales and service will be directed. Arch B. Dunwody, a Rietz vice-president, will be in direct supervision. He formerly operated Dunwody Engineering Co. Chicago.

More groceries were bought in 1954 than in any year in the country's history reports the Grocery Manufacturers of America, Inc. An approximate gain of 5% is anticipated for 1955. Food expenditures by consumers in '54 represented approximately 25% of after-tax income, about the same as '53.

Package Machinery Co., East Longmeadow, Mass. announces that Roe S. Clark, president, has recently been elected chairman of the board of Reed-Prentice Corp., Worcester, recently acquired subsidiary. Roger L. Putnam became president and Frederick W. McIntyre, vice-president in charge of sales.

James McGowan, Jr., chairman of the board, Campbell Soup Company, Camden, N. J. has been named a trustee of the Drexel Institute of Technology, Philadelphia. Mr. McGowan is a life member of the Corporation of Massachusetts Institute of Technology and a member of the Visiting Committee for the Department of Food Technology of that institution.

Clarence Francis, retired Chairman of General Foods Corp. will be awarded the Henry Laurence Gantt Gold Medal on January 26th during the General Management Conference of the American Management Association in New York. Mr. Francis is now Special Consultant to the President of the United States and Chairman of the Intra-Agency Committee on Agricultural Surplus Disposal.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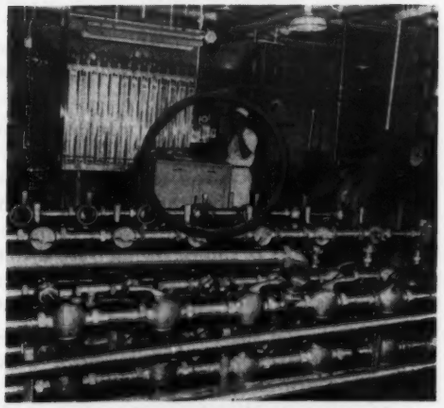
Processing control stands by for switch-over to new product



Processing control center receives notice of impending change-over

Packaging line foreman is notified over public address system

Line Four operator alerts control center as end of run nears

"control tower technique" eliminates divided responsibility

An over-all central communication and control center, plus a product flow control center, avoids duplicate effort, lost time at Hood Dairy

RALPH MERRIMAN,
Plant Manager, H. P. Hood & Sons
as reported by **FP staff**

Problem: Confusion can reign in a plant where as many as 18 products must be controlled through a myriad of processing operations — many of which must be scheduled through common equipment. This number of products is produced, in varying amounts, daily at the Boston plant of H. P. Hood & Sons. To coordinate the complexity of production communication between each department and process, it was necessary to reduce the hodge-podge of separate, individual decisions — involving constant conferences, delays, duplications, etc. — with some sort of centralized control.

To indicate the extent of the problem at Hood — whose Boston plant probably ranks as the largest, volume-wise, in the US — consider only some of the milk products: Grade A, Grade B Premium, Grade B, Guernsey, and a premium high-fat, fortified milk. Each of these is produced in homo and cream-line forms; and chocolate, strawberry, and coffee flavored milks. Most of these variables are packed in half-pint, pint, third-quart, quart, two-quart, two-gallon, 20 quart, and 40 quart containers. Many variables are further doubled, being packed in both cartons and glass; even the products for fibre containers must be further diverted since both Canco and Pure-Pak lines are used. To further complicate the scheduling of the processing and packaging operations, milk for some areas must be dated, while milk for other areas is not.

Many of these items require use of the same equipment — such as heat exchangers, packaging machines, etc. For maximum efficiency, flow through these operations must be planned so that a minimum amount of takedown for cleaning is required. For instance, to avoid downgrading of Grade A milk, all Grade A products must be run before Grade B is processed. The same is true of the flavored milks: all "white" milks should be scheduled to be processed first, to avoid color mixing with the flavored milks.

Solution: As first step to integrate control, Hood management has established a central communication center. This glassed-in "command HQ" (see cover photo) is located on the first floor, looking down on the main filling lines. All orders, changes, and production and receiving information are channeled through this central station.

On the second floor, milk is received in blending tanks, and processed as needed for the packaging operation, most of which is on the floor below. A second step toward integrating the many production variables under central control was to re-engineer the flow of all pasteurized milk through a central "header" system (see top photo), so that milk from a specific tank could be shunted as needed to filling equipment in the packaging department.

A "branch station" at this point is in direct communication with the central coordinating center in the packaging room below. As new milk orders are received in the central station, production schedules are changed, and the new totals are phoned to the header station. In addition, inter-plant phones located at each packaging line allow the operators to inform central control when their line is completing one product. This advance information gives the milk flow foreman time to prepare for a shift to next product.

Results: Maximum use of all processing and packaging equipment is now possible. All responsibility for in-plant production control has been concentrated under one central control head. Individual lines of communication are definite for each separate operation — instead of the haphazard, spur-of-the-emergency type of control which had "grown up like Topsy."

Lost time due to improper pre-scheduling has been minimized, particularly during periods of change-over. Delays formerly were frequent — as when a bottling line would complete a run, to find that

(Continued on next page)

SEE THESE NEW AND IMPROVED MODELS
of fmc FOOD EQUIPMENT

ON SPECIAL DISPLAY AT THE '55 CANNERS SHOW IN CHICAGO
BOOTH NO. 1
FEB. 19-23

EACH A STAR PERFORMER!
EACH DESIGNED TO DO ITS JOB
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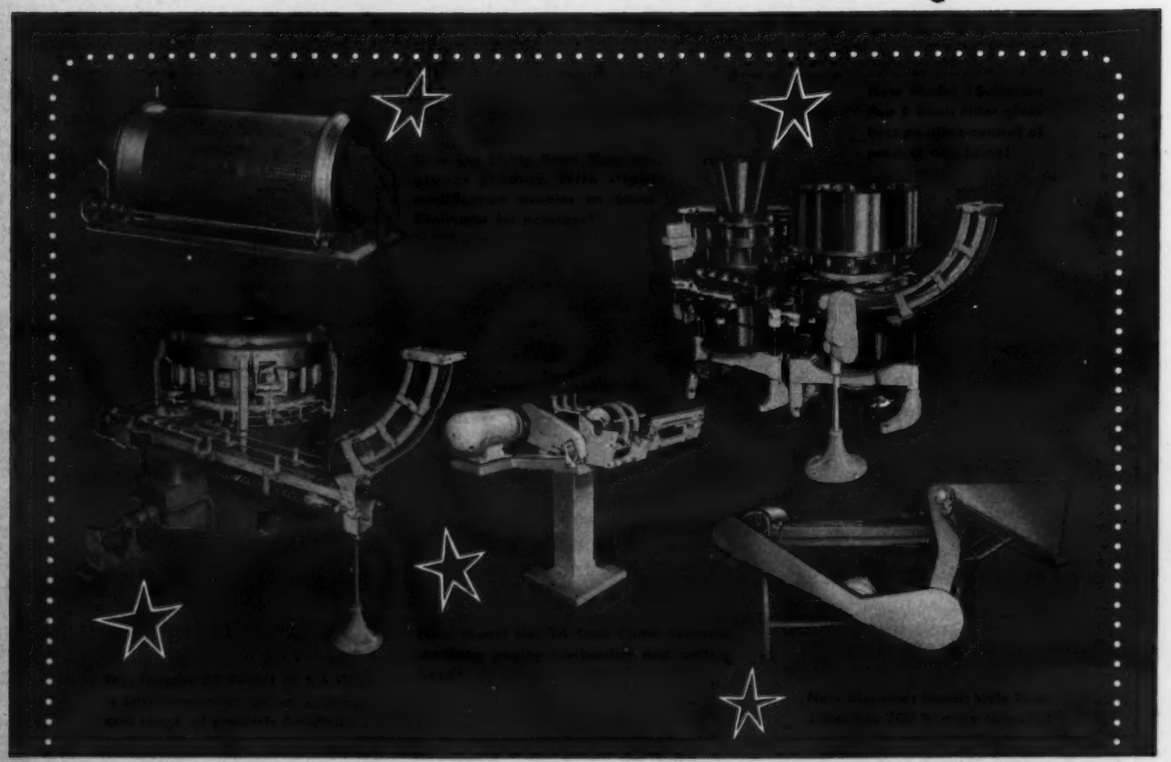

These are but a few of the machines you will see at the FMC booth. Also included will be a display of the FMC "Sterilmatic" cooking principle—the only commercially accepted principle that combines a "continuous operation" with "rolling can agitation" to provide fast, even heat penetration for almost any product and any can size.

See the revolutionary KEY Froth Flotation Cleaner that has set new standards of efficiency for cleaning peas, corn and lima beans; and the continuous Carruthers' Multi-Pak Filler that fills either whole or French-sliced green beans into cans at high speeds. Stop by and visit us at Booth No. 1, National Canners Convention in Chicago, February 19 through 23.

Key to food equipment

FOOD MACHINERY AND CHEMICAL CORPORATION
Canning Machinery Division
General Sales Offices:
WESTERN: SAN JOSE, CALIFORNIA **EASTERN:** HOOPESTON, ILLINOIS

When inquiring check FP 1694 on handy form, pgs. 2-3

(Continued from preceding page)

the processing department had not received sufficient advance notice to have the next product ready. Or, changes in orders were received after the daily schedules had been sent to the individual foremen; then the communication of the change would become delayed until after that particular production run was completed — necessitating expensive duplicate line changes.

While all the problems of managing production and packaging control schedules haven't been licked by these "control tower" techniques, Hood management feels that the system is a tremendous first step toward "ideal" production control. Proof of this success is shown by the fact that they are extending and refining the centralized control idea, as more experience is gained in its operation.

To follow the specific practical techniques which make centralized production control workable at Hood's (each of which is adaptable to use in most food processing plants), see the articles which follow.

How it works at Hood's (1) . . .

communications and control center

All production scheduling decisions are coordinated through this "HQ", using inter-plant phone system, public address system, and automatic production counting

A separate, glassed-in room at H. P. Hood & Sons, Boston, forms the centralized production control headquarters for production scheduling. An inter-plant phone system, supplemented by a public address

Case counter (arrow) is located on each packaging line, relays running totals of production to central control panel, as well as line operator

system and regular phone service, is the communication essential. In addition, a panel board which keeps a running total of the production of all lines, aids in the planning operation. All orders, order changes, inventory figures, and other pertinent production data, are communicated to the control room.

This information is coordinated on production control sheets, and the control center then communicates instructions to the proper department or line. For instance: it is determined that 1800 cases of Grade A Homo quart bottles are needed from Line Number Four, followed by 250 cases of Grade A creamline.

The control man calls to Line No. Four operator on the inter-plant phone which is located right on the line (see photo). When the run of Grade A Homo is almost complete, the line operator will call the control center. Control center then alerts processing department, which stands ready to make the line switchover to the milk tank in which the previously ordered non-homogenized milk is ready. Similarly, the control center informs the bottle stack area of the individual requirements and any changes for each line.

Case counters are located on the conveyor from each filling line. These are connected to the central counter panel, allowing control operator to appraise the status of each line at a glance. The central public address system is used for general announcements, and also allows control room operator to alert individuals in the plant, should they be away from their phones when needed.

(Productimeter totalizing counters on panel board are manufactured by the Durant Mfg. Co., Dept. FP, 1952 N. Buffum St., Milwaukee 1, Wis. . . . or for more information check FP 1695, pgs. 2-3.)

How it works at Hood's (2) . . .

product flow control center

All milk tanks, processing equipment are interconnected through central "header" equipment; remote level gages on central panel show status of each tank

In the milk processing department at Hood's Boston plant (refer to opening article), the raw milk is held in a series of ten 4000 gallon cold wall blending tanks, which are located along one side of the processing room. Milk from these tanks is piped as needed to the specific equip-

(Continued on next page)

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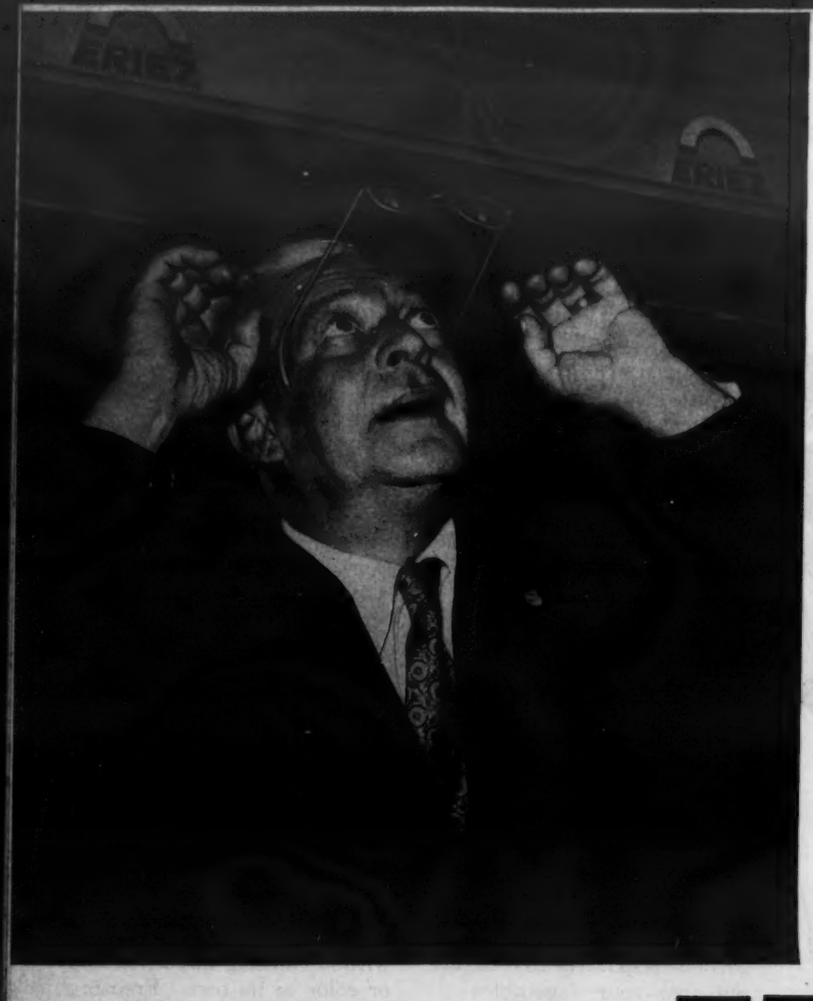


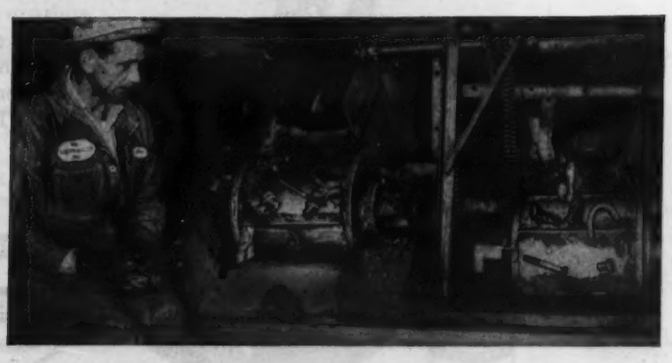
EYE-POPPING POWER. Get close to a powerful Eriez Magnet and it will pull industrial goggles right off your nose, as Art Baker, popular TV personality demonstrates. The idea of a really powerful magnet has found a profitable application in American industry: separating tramp iron from processing lines . . . tramp iron which causes fires, machinery damage and product contamination. *All Eriez Magnets are non-electric, self-contained. They operate without any wires or attachments. Best of all their magnetic power lasts a lifetime.* The first cost is the last.

FURROWING THROUGH TRAMP IRON DANGER. The solution to removing tramp iron from free-flowing material in slope-shaped hoppers was found in a magnet which looks like a farm furrow. The Eriez Hopper Magnet consists of steel step-discs spaced in 1" increments. Built in any width desired, this hopper magnet efficiently removes tramp iron which causes machinery damage, fires, and product contamination. Ideal for surge-fed application. Want more information on this product? . . . request Bulletin B-204.

MAGNETIC IDEAS FROM ERIEZ

Eriez "Magnetic Ideas" can help you. Eriez' factory-trained field men, backed by Eriez' laboratory and engineering know-how, will be happy to study your particular problem, make a plant survey and offer helpful "Magnetic Ideas". Write or call Eriez Manufacturing Company, 75N Magnet Drive, Erie, Pa.

PAPER MILL PROTECTS PUMPS. Two bucketfuls of tramp iron are removed every month by an Eriez Magnetic Pressure Hump in one of the East's largest plants making book and magazine grades of paper. This installation, in the line at the point following the beaters and ahead of the jordans, has proved to be the solution to pumps damaged by bailing wire, nails, and other forms of tramp iron found in the white water lines. Heretofore, pumps had to be serviced 4 or 5 times a week. It will pay you to get more information about this magnetic separator and the dozens of others that Eriez offers. Request new 16-page Catalog 17.



ROLLING DRUMS HALT METAL PARADE. Tramp iron stops when it reaches these Eriez Magnetic Drums installed at the Stappenbeck Rendering Co., Rochester, N. Y. Manufacturers of tallow, processed meat scraps, etc., the company uses the magnetic drums to remove all traces of metal from the finished product, and to prevent damage to costly screens and expellers. Previously, *because of metal damage*, screens had to be changed after 1 to 5 tons of material had passed over them. Now they're changed after screening 40 or 50 tons, and then only because they wear out, *not* because of tramp iron damage.

(*Continued from preceding page*)

ment (pasteurizers, homogenizers, mixers, etc.), which covers a large area.

Formerly, milk was drawn from individual tanks, and piped to the various operations through a series of independent take-down lines. These lines were set up and taken down according to the needs of individual products. Because of the complexity of products and operating variables, processing crews were busy scuttling from one operation to another to make changeovers. Delays resulted—so centralized control was initiated.

In order to synchronize the control of product from the raw blending tanks, through the processing equipment, including delivery to the packaging department, all milk is now channeled directly to a central "header" system, mentioned in first article. This "flow control center" consists of some 90 three-way valves, through which milk from any of the pasteurized supply tanks can be directed to any piece of filling equipment, merely by turning the proper valves.

Now, processing foreman is able to control entire operation from this central station. It is now possible to switch milk flow with a minimum of lost time. By interconnecting the product lines through these valves, flexibility and speed are achieved which were never before possible.

Around 4000 feet of permanent glass pipe conducts the processed product to the packaging department on first floor. Approximately 1000 feet of glass line are used for raw and pasteurized products in receiving and processing. Remainder of lines are the take-down type.

The "header" system of valves is complex—however, it allows the responsibility of product control to be centered in one individual, and his assistant, who have become proficient with experience. The "con-

For more information on product at left, specify FP 1697 . . . see information request blank between pages 2 and 3.

Centralized level indicating panel allows processing foreman to keep track of raw product

trol tower" aspect of this centralized processing control area is enhanced by locating all tank gages on a single panel. This location allows the operator in charge to read the status of his tanks immediately. Gages are manometer type, adapted to remote reading by counterweight of air pressure.

(Three-way plug type valves used in "header" system are product of Tri-Clover Machine Co., Div., Ladish Co., Kenosha, Wis. . . . or for more information reader may simply check FP 1698 on the convenient Reader Service slip which is located between pages 2 and 3.)

(King level gages are manufactured by King Engineering Corp. Box 500, Ann Arbor, Mich., or for more information reader may simply check FP 1699 on the convenient Reader Service slip which is located between pages 2 and 3.)

Meat tenderized in cooking if packer injects enzyme

Recent experiments show promise for enzyme-tenderizing of lower grade meats. Enzymes found naturally in meat tenderize slowly — when supplemented with additional proteolytic enzymes, process is considerably hastened. Work was done with pepsin, trypsin, bromelin, and papain. The latter, prepared from leaves and fruit of papaw tree, was found most effective. Concentrations of about 0.0006% (on basis of meat) materially improved tenderness of meat.

Tenderizing does not take place in cold storage, but occurs at high temperatures of cooking. Vascular injection is required for all cuts more than an inch thick. Workers found no deleterious physiological effects from meat.

(Eight-page reprint, "The Aging and Tendering of Meats — Scientific Aspects", was written by L. S. Paddock and J. M. Ramsbottom, Swift & Co., Dept. FP, 4115 S. Packers Ave., Chicago 9, Ill.)

while her mind's on her waistline

sell her your own SUCARYL®-sweetened food products

Bathroom scales do a daily job of reminding overweights about SUCARYL—the non-fattening way to satisfy that "sweet-tooth". This means a dietetic market that actually sells itself on buying—day after day!

This is a big market . . . a fast-growing market. More important it is a *pre-sold* market. Most people know about SUCARYL. They'll shop for SUCARYL-sweetened products, they'll pay more for them—and they'll come back for them, week after week.

Have this market shopping for *your* line of non-fattening foods. Right now, timing and public interest are in your favor. Start by getting the facts, *today*. Send for a free copy of "Making the Most of the Dietetic Market with SUCARYL." Write to: Chemical Sales Division, Abbott Laboratories, North Chicago, Ill. Abbott

®Cyclamate, Abbott

When inquiring check FP 1701 on handy form, pgs. 2-3

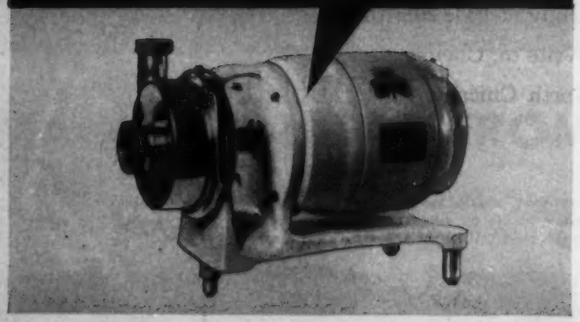
TRI-CLAMP "Return Cups" provide simple, fast disassembly for cleaning CHESTER-JENSEN HEATER

. . . can be used for "take-down" or cleaned-in-place service

• This Chester-Jensen Heater is unique in that it does not employ conventional methods of return flow. Instead, a stainless steel return cup takes the place of complex return covers or fitting assemblies. The return cup is held in place with a simple TRI-CLAMP toggle union.

The advantages of these Tri-Clover snap-action clamps are obvious—faster, simpler original assembly at lower cost—and speedy disassembly for cleaning, inspection, or replacement.

While this is a specialized application of the exclusive Tri-Clover TRI-CLAMP principle, the same basic advantages apply to the full line of TRI-CLAMP stainless steel ells, crosses, tees, laterals, etc., for use in either "take-down" or cleaned-in-place lines. When installed in "take-down" lines, the "easy on and off" feature means a tremendous savings in labor at wash-up time. When used in C-I-P lines, Tri-Clamp fittings offer important savings in both original cost and in maintenance expense.



Included on the Chester-Jensen heater system is the Tri-Clover *"Pump King,"* one of a complete line of Tri-Clover sanitary pumps — that years of service have proven will out-perform and out-last any other centrifugal pumps available to the dairy industry. These pumps feature: *Wide choice of seals — Design that actually exceeds 3A sanitary standards — Streamline heads for faster assembly and disassembly — Patented impeller for higher efficiency — Pump heads that can be turned 360 degrees to simplify installation* — and many other features which make it the most "copied" pump in the industry. *For full details, send for Pump Catalog 253.*

SEND FOR NEW CATALOG

Complete details and specifications covering the full line of TRI-CLAMP Stainless Steel Fittings are available in the new Tri-Clover Catalog 1-154. Send for your copy today.

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When inquiring check FP 1702 on handy form, pgs. 2-3

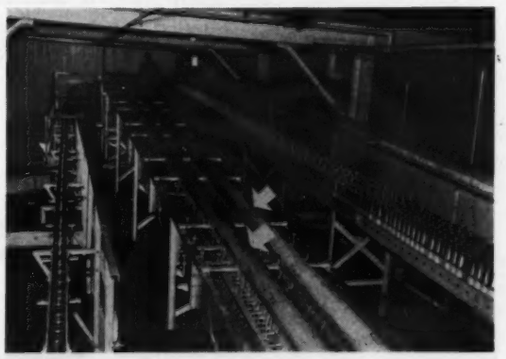
new solutions

Stop-and-go agitation of spin-cooler speeds cooling, uses 'waste space'

No room for the can cooling operation at P. J. Ritter — so they built a mezzanine

Space was the limiting factor when P. J. Ritter & Company, Bridgeton, N.J. was planning a new production line for fruit juices and nectars. Production space was already well "compacted", and no additional land was available for new construction. Existing lines were re-arranged to accommodate the processing and closing sections, but room for holding and cooling facilities was lacking.

A mezzanine was built over existing processing and packing lines, and two 79′ spin coolers were installed. Hot-filled cans now come from fillers via elevators, travel parallel to coolers on wire-mesh belts, so that can interiors are pasteurized by heat of contents. Circular unscrambler plates at end of belt reverse flow of cans into coolers.

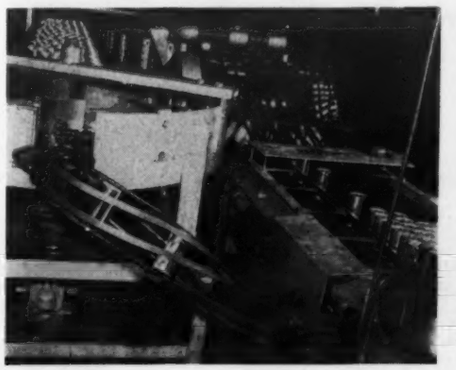


View of double-line spin-cooler (center). Hot cans are conveyed to far end by conveyor on right. Water is spraying on intermittently rolling cans, shown beneath the round splash guards (arrows) of cooler

At this point, irregularities in production tended to cause congestion of cans at times, so an assembly belt 7′ long was established. Cans from unscrambler-turn-around unit discharge onto this wire-mesh belt, which maintains uniform feed into coolers by furnishing a reservoir for temporary over-production.

Cans in spin-cooler are conveyed up slight incline (9″/10 feet of length). Cans roll on sides on a 24″ rubber-fabric belt, with angle-iron can guides above. As cans are rolled up belt at 75 fpm, gravity forces them to slow and stop intermittently, then start again. This "stop, back-up, go" action produces agitation which tends to bring entire contents of cans against the cooled sides for maximum heat exchange.

Intermittent agitation avoids tendency of heavier, cooler portion of contents to be held against can sides by the centrifugal force which is generated when cans are spun at uniform speeds.

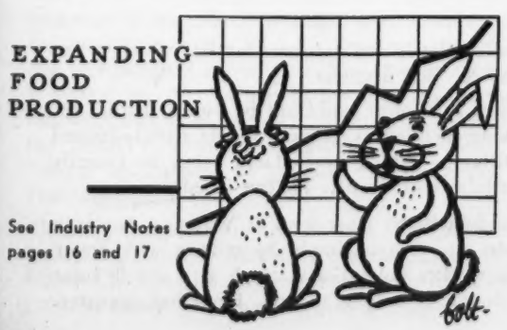


Here is far end. Cans come from holding belt into unscrambler at center left, are delivered singly onto 7' long assembly belt at right, from which they enter spin-cooler

Cans are conveyed in cool water (60 to 64°F well water, summer temp) approximately ½" deep. A continuous spray issues from a shielded waterline — mounted directly over the conveyor — through drilled openings on 6" centers. Water is sprayed directly on the cans for evaporative cooling. Sprays are shielded, so that stray water around coolers is avoided. Contents are uniformly cooled to around 100°F, discharged to labeling room.

Cooler is equipped with five hp motor, variable speed, double-drum drive. Automatic take-up insures proper tension on conveyor belt. Over-all width is three feet. One line is adjusted to handle either #1 or #2 cans. The other is used for 46 oz size. No. 1 cooler conveys two parallel lines side-by-side and two lines of sprays, has rate of around 400 cpm. The 46 oz cooler has a single line of cans under sprays.

(Skinner Roto Can Cooler is manufactured by Machinery Div., Clinton Foods Inc., Dept. FP, P.O. Box 157, Dunedin, Fla. . . . check FP 1703, pgs. 2 & 3.)



See Industry Notes pages 16 and 17

Frankfurter makers need '999'

So do makers and processors of beer . . . candy canned foods . . . cereals . . . malted milk . . . margarine . . . mayonnaise . . . olives . . . sauerkraut . . . seasonings . . .

Morton '999' Salt
for better flavor and quality

Morton '999' Salt insures uniform flavor and quality in processed foods for two reasons:

1. Morton '999' is *guaranteed* always to contain more than 99.9% pure sodium chloride. The remaining 0.1% (or less) is a neutral inert sodium salt—and never bitter calcium or magnesium compounds.

2. Morton '999' Salt is produced by vacuum pan evaporation to assure you a salt that is clean, free-flowing... evenly soluble. It has a more constant weight per volume ratio which insures more accurate salt measurement.

For more information about Morton '999' Salt—and about Morton service and technical help—write this week to:

MORTON SALT COMPANY

Industrial Division, Dept. P6-1,
120 S. La Salle St., Chicago 3, Ill.

When inquiring check FP 1704 on handy form, pgs. 2-3

PAYGEL

(WHEAT STARCH)

leaves no cereal taste to mask your products own fine flavor!

If you use a thick-boiling starch in your product, Paygel can help you bring out the best in your food. Here's why:

Paygel helps your product retain its *own* distinctive flavor. It leaves no "cereal" taste—will not "mask" the most delicate flavor.

That advantage alone can mean additional sales for you.

But Paygel has other advantages, too. It's the *one* starch that replaces blends in food products. It's economical, too—In salad dressings Paygel makes possible a 5 to 7% starch reduction. It does not form lumps, and therefore gives smooth, even texture to products such as canned soups, salad dressings, pie fillings, puddings, custards, dessert mixes, candies and canned specialty foods.

We'd like you to see for yourself what Paygel can do for your product. Just mail coupon below for free sample and technical information.

General Mills

Special Commodities Division

MINNEAPOLIS 1, MINN.

Please send me free sample, technical information and price list on General Mills Paygel.

Name_____

Firm_____

Firm Address_____

City_____ **Zone**____ **State**_____

Type of product or products_____

When inquiring check FP 1705 on handy form, pgs. 2-3

Making real masa dough is reduced to 5-minute one-man operation at Walker's Austex Chili Co. at Austin, Texas. Mixing flour (see photo below) with water produces 450 lb batch of finished dough

instant-mix tortilla flour

yields real Mexican flavor in extra-convenient form

Switchover to easy-to-use corn tortilla flour (masa) has resulted in improved quality at lower costs for line of canned Mexican specialty foods at Walker's Austex Chili Co., Austin, Texas. Real masa flour formerly had to be hand made by a prolonged and complicated method involving considerable waste and possible spoilage. Many canners substituted corn meal when possible, but its use had serious drawbacks. One of these is its lack of uniformity, which requires constant testing and subsequent altering of amounts used. Corn meal also fails to yield real Mexican flavor and produces tamales which, when reheated, lack firmness.

Where corn meal could not be used (tortillas for making enchiladas), canners bought already-cooked tortillas — which necessitated tying in canning schedules with tortilla factory schedules.

The dehydrated masa used at Walker's Austex is made into dough simply by mixing with water. One worker can make as much as a 450 lb batch of dough in only 5 minutes. Flour has consistent

Finished masa dough is made into tamales, and wrapped for canning on this line

quality, amounts used never need changing. Production time has been cut in half — and products have real Mexican flavor. Space is saved since less equipment is needed. Tortillas can be made in the plant at half the cost of purchasing already-cooked ones. Costs compared to corn meal break about even — corn is cheaper but masa absorbs more water, providing more bulk.

(Masa Harina is manufactured by the Quaker Oats Co., Dept. FP, 336 Merchandise Mart, Chicago 54, Ill. Check FP 1706 on handy form, pages 2 and 3.)

Sucaryl sweetened products and the dietetic market

Potential market of the dietetic products, made with Sucaryl, is discussed in a 16-page illustrated manual. It is pointed out that there are 34 million adult Americans who are overweight. Growing consumption of low calorie beverages is an example of the possibilities within the field. Projected figure for this year indicated sale of 10 million cases as against 6 million for '53. Sections in the book discuss the following aspects of Sucaryl: "nature of its sweetening power"; "meaning of bitter-taste threshold"; "effects on character of products"; "cost factors"; "labeling".

"Making the Most of the Dietetic Market with Sucaryl" is issued by Abbott Laboratories, Dept. FP, North Chicago, Ill. When inquiring specify FP 1707 on handy form, pages 2 and 3.

A REFLECTION OF...

GOOD TASTE

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When inquiring check FP 1708 on handy form, pgs. 2-3

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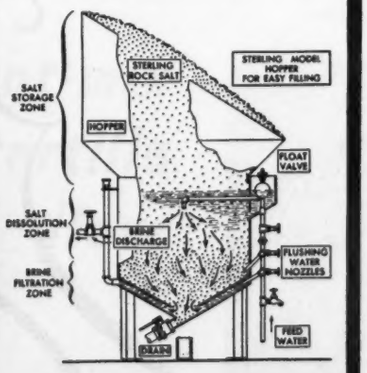

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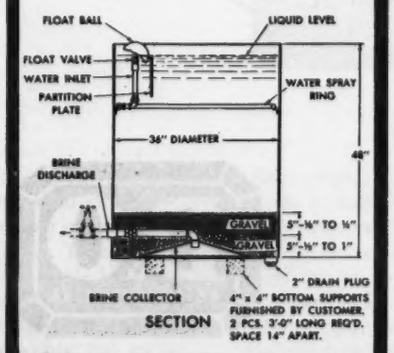

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When inquiring check FP 1709 on handy form, pgs. 2-3

Shortening has 460° smoke point, improves high temperature frying

Effectiveness of antioxidant in extending potato chip shelf life shown in test

Uses: Especially suited for heavy-duty frying and withstanding the higher temperatures encountered in making potato chips and doughnuts.

Features: Shortening has smoke point of 460°F, well above frying temperatures on continuous frying units now in use.

Description: Shortening is made from hydrogenated meat fats and vegetable fats with not more than .01% Nordihydroguaiaretic acid, .02% butylated hydroxyanisole (BHA) and .005% citric acid in propylene glycol added as preservatives. Antioxidants meet government requirements and contribute to improved product shelf-life.

Tests in Armour Labs were made to determine antioxidant efficiency. Potato chips fried in the shortening were packed in stapled (but not airtight) glassine bags and exposed to 80°F. There was no sign of rancidity at end of a six week test period.

Product is packed in 50 lb tins, 110 lb tins, and 400 lb drums.

(Fry-zall shortening is made by Armour & Co., Dept. FP, Union Stock Yards, Chicago 9, Ill. . . . or check FP 1710 on form, pages 2 and 3.)

Imitation apple flavors — crystal or liquid

A new series of apple flavors in both liquid and crystal form is now available for use in such products as gelatine desserts, ice pops, sherbets, hard candies, fondants and ice cream. Fresh bouquet which is blended with green and fruity character makes these imitation flavors effective as conditioners and ingredients in various fruit-type formulations.

(Imitation apple flavors are available from Givaudan Flavors Inc., Dept. FP, 330 W. 42nd St., New York 36, N. Y. . . . or check FP 1711, pages 2 and 3.)

Trend toward concentrates key to new era in caramel colors

In line with the trend toward concentrates, caramel colors are now produced by a patented process which involves separating the color bodies from the sugars and sugar intermediates present in caramel color. In this way, tremendous tinctorial power is possible without forcing the color or reducing stability. Colors

are so highly concentrated that great savings in shipping and storage are effected. These colors are discussed in a "jumbo" size, illustrated publication. In addition to information on the new colors the book traces the development of caramel color and discusses its chemical characteristics.

"The Story of Caramel Color" is issued by Union Sales Corp., Dept. FP, Columbus, Ind. When inquiring specify FP 1712 on handy form, pages 2 and 3.

Weight loss in smoked meats cut by use of phosphates

Increase moisture retention; involve no changes in regular curing procedure

Uses: For reducing weight loss in smoking or cooking meats by increasing the moisture retention of meat fibers as well as improving color development and stability.

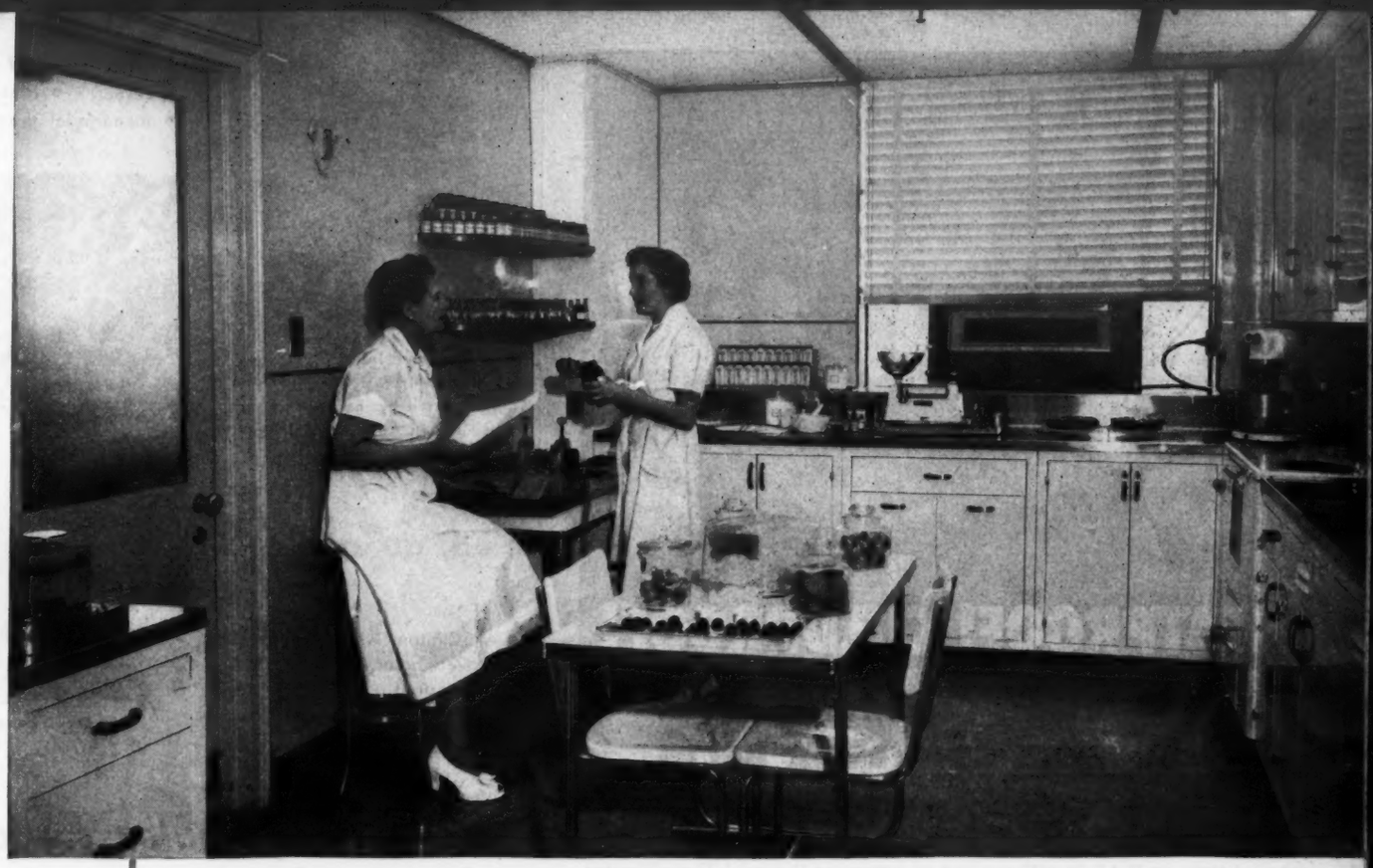
Features: These phosphate products are easy to use, requiring no change in regular curing procedure. They are soluble in curing pickles at cellar temperature, with no special heating required. They do not crystalize in the lines or in the meat.

Description: Produced in two types: "Curafos" sodium hexametaphosphate, usually preferred for sausage, bacon, and smoked hams, and "Curafos" sodium tripolyphosphate for such products as canned and ready-to-eat hams.

("Curafos" phosphates are available from Calgon, Inc., Dept. FP, Hagan Bldg., 323 Fourth Ave., Pittsburgh 30, Pa. . . . check FP 1713 on handy form, pgs. 2 & 3.)

See page 9 for data on lysine, the protein-boosting additive

For more information on product at right, specify FP 1714 . . . see information request blank between pages 2 and 3.



Our Flavors Are Tailor-made and Tested to Insure You a Better Tasting Product

Oftentimes a food, dessert or beverage product requires some special taste or seasoning effect that cannot be achieved through the use of available flavors. In such instances, our laboratories study the manufacturer's requirements and prepare custom-made compounds designed to meet the desired specifications. These materials are then exhaustively tested in our Experimental Food Laboratory (above) where, in laboratory controlled batches, they are incorporated in the actual finished goods. Rigid taste and shelf tests follow. When perfected to our laboratory's satisfaction and submitted for approval, these tailor-made flavoring specialties usually represent a precise fulfillment of the customer's needs. . . . Why not join the many leading manufacturers who have availed themselves this service by consulting FRITZSCHE . . . *A FIRST NAME IN FLAVORS SINCE 1871.*

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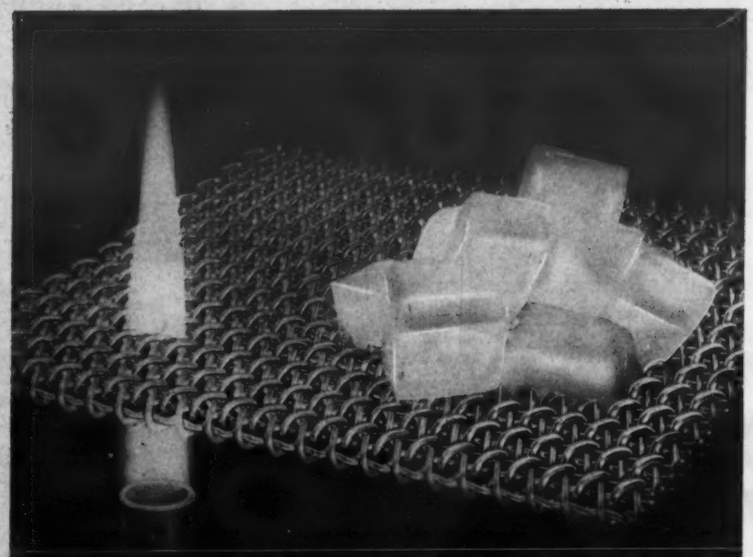

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proves Cambridge
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best for food plants!

You can bake, fry or blanch—cool, chill or freeze—any type of food product right on the belt without fear of damaging the belt! The all-metal wire mesh belt is impervious to damage from heat or cold, moisture or other corrosive conditions!

That's just one reason why WIRE MESH conveyor belts are superior to solid types of belting for food processing. Open mesh allows free drainage of wash water or process solutions, free circulation of heat or cold during cooking or cooling. All-metal belt has no odors, thus cannot contaminate the natural flavor or aroma of your product. Stainless steel, widely used for food processing belts, further assures freedom from contamination by giving lifelong rust-protection. You can steam clean or wash your wire mesh belt as often as you like without damage.

No matter how you look at it, the best all-around conveyor belting for food plants is WIRE MESH . . . and the best wire mesh belts are made by Cambridge, pioneers in wire mesh belt fabrication. Cambridge belts are made in any size, mesh or weave and from any metal or alloy. Your Cambridge Field Engineer can recommend the best type for your plant. Look under "Belting-Mechanical" in your classified telephone book, or write direct for Cambridge man nearest you.

BEANS FREEZE very quickly, uniformly on this Cambridge wire mesh belt in a continuous freezing tunnel. Moving belt provides fast continuous production; open mesh allows free cold circulation for uniform freezing.

FREE REFERENCE BOOK illustrates and describes wire mesh belts, gives conveyor design information, specifications and metallurgical data. Write for your copy today.

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OFFICES IN PRINCIPAL INDUSTRIAL CITIES

When inquiring check FP 1715 on handy form, pgs. 2-3

ideas gleaned from
- research
- other industries
- managerial practices

CHARLES H. PELTON,
Chief Chemical Engineer,
Clinton Foods Inc.,
Corn Processing Div., Clinton, Iowa
as reported by the staff
of CHEMICAL PROCESSING

Photo shows comparative size of granular product with a cigarette and dime

At Clinton Foods Inc., improved color, and 8 to 10 times greater capacity between reactivation cycles result when —

activated granular carbon replaces bone char in decolorizing dextrose

Problem: Decolorizing method used in refining dextrose at Clinton Foods, manufacturers of bulk food products from corn, limited their production goals, and was not as efficient as desired in removal of color bodies.

Typical Physical Characteristics "Type SG" Carbon

Adsorptive	
Surface area (BET Nitrogen, sq M/gm)	1000-1100
Iodine number (Adsorbed at 0.02N I_2/KI soln, mg/gm)	950-1050
Molasses number (*)	225-250
Structural	
Particle size distribution (US Screen)	8x30
Mean particle diameter (mm)	1.5-1.65
Bulk density (max, gm/cc)	0.44-0.48
Hardness (% mean particle diam. after shaking in concave pan on Ro-Tap 20 min. with 10 each ½" and ¾" steel balls)	75-85
Porosity (total pore volume, cc/gm)	0.9-1.1
Voidage (space between particles, %)	39-42

*Molasses number is determined by method given by J. W. Hassler in "Active Carbon, The Modern Purifier," p. 90 (1941).

One of company's major products is refined dextrose hydrate called Clintose®, of which about 430,000 lb/day is produced. As 28°Be hydrolysate liquor, it is passed through three filter beds of carbon to remove color bodies and facilitate crystallization of first sugar. Bottleneck in refining process was the decolorizing step in which bone char was used. Not only did this take considerable time, but the char had to be revivified in kilns at frequent intervals.

Solution: Four years ago, Clinton Foods replaced the bone char with a specially refined granular activated carbon made from coal. Clinton used its existing filter bed setup of 19 units. A six hearth Herreshoff furnace was installed two years later for thermal reactivation of the carbon, making this the first large-scale integrated application of the decolorizing system. (Before furnace was put in, Clinton returned spent granular carbon to manufacturer for reactivation.)

The granular activated carbon combines the advantages of high efficiency, obtainable by counter-current operation of columns of granular adsorbent, and the high

decolorizing capacity usually associated with pulverized adsorbents. It is intended for use in deep columns, and has a particle size distribution such that pressure drop will not be excessive. Recommended flow rates are ¼ to 1½ gpm/sq ft.

Carbon contains about 0.5 to 0.7% of acid-soluble iron which may cause some difficulty in first few cycles of low pH liquor. Clinton treats make-up carbon with HCl to remove this iron. As in bone char refining, an after-treatment with pulverized vegetable carbon is used to remove final impurities.

Results: Objectives of better decolorization and increased plant capacity have been realized. Color is improved and contributes to better overall yield in crystallization. Eight to ten times the former quantity of hydrolysate liquor can be processed for an equal volume of decolorant. Tests show that up to 16 times greater efficiencies are possible.

An added plus value is that carbon removes color precursors, such as hydroxymethyl furfural and other trace impurities of low molecular weight, which might form off-colors during later processing and storage. Net result is a brighter finished sugar of greatly increased storage life, less darkening of liquors in process, and general lower levels of color in recycled streams.

Reactivation of the carbon brings it back to its original decolorizing efficiency. Equivalent of one bed a day is reactivated on first sugar. Contrast this present operation with the six to ten beds of bone char reactivated each day. Since the granular carbon is only half as dense as char, savings on a weight basis are even greater.

Based on pounds of Clintose produced, activated granular carbon has proven economically favorable. In addition, it has replaced bone char on second sugar decolorizing. With the increase in plant capacity made available, Clinton now provides granular carbon purification for its syrup, giving longer shelf life and superior cooking characteristics in candy manufacture.

Other Applications

Activated carbons have been used in isolating (by absorption) low concentrations of material in aqueous solutions, making practical the material's recovery by elution with specific chemical reagents. Use in non-aqueous solvents is also favorably indicated.

The non-specific, general purpose carbon should find many applications where pulverized carbons are now used. Other granular carbons are available for vapor phase applications such as solvent recovery, gas purification, catalysis, and odor control.

(Type SG activated carbon for decolorizing is a product of Activated Carbon Div., Pittsburgh Coke & Chemical Co., Dept. FP, Grant Bldg., Pittsburgh 19, Pa. . . . or for more information check FP 1716 on handy form, pages 2 and 3.)

How come an old-line camera manufacturer stirs up the shortening business like that?

Meet the new *Kodak Stereo Camera*. A modest $84.50, plunked down on any of umpty-ump thousand camera counters, makes it all yours. You can then take glorious Kodachrome pictures in three glorious dimensions even if you haven't made a snapshot since your 12th birthday.

Thus for the past 67 years the general public has known us—the people who made the snapshot as much a part of family life as the kitchen table.

To keep the millions of snapshooters snapshooting, we got involved in such by-paths of research as how to pack film to withstand the tropics. The scientist working on that question wanted to pump air out better than it had ever been pumped out before, so he invented some new vacuum pumps. Then, sort of forgetting why he had started, he looked around for interesting things to do in a super-vacuum. It didn't take long (only nine years or so) to figure out how to put oily materials in such a vacuum, heat them in a thin film, and condense the vapor on a near-by cooler surface. This resulted in sorting out the constituents of the oil, molecule by molecule. After a while, we learned how to do it by the tank car in equipment that bore no resemblance to laboratory glassware.

One of the things we tried in the molecular stills was the mono-diglyceride emulsifier that had come into the fat business in the early '30s. We found that the process separated out the active mono from the inactive esters, the free glycerine, the catalyst, the taste, and the color. It concentrated the "shortening improving" effect in the distillate. We marketed the distillate under the trade-mark "Myverol."

Even after recognizing the efficacy and purity of the distilled monoglycerides, it took us and the shortening industry about four years to choose the right varieties for each application and evaluate them by commercial use. The realization that Myverol monoglycerides will actually save money while doing an efficient job of emulsification seems to have hit large segments of the industry at the same time. We welcome the rising excitement, for our stills can handle even more than they are at present. To join the party, write ***Distillation Products Industries,*** Rochester 3, N. Y. Sales offices: New York and Chicago • W. M. Gillies and Company, Los Angeles and San Francisco • Charles Albert Smith Limited, Montreal and Toronto.

distillers of monoglycerides made from natural fats and oils

DPi

Also... vitamins A and E

Distillation Products Industries *is a division of* **Eastman Kodak Company**

Camera price quoted includes Federal Tax and is subject to change without notice.

When inquiring check FP 1717 on handy form, pgs. 2-3

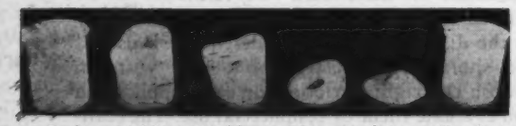
Irradiated polyethylene properties permit use as vessels, liners, film

Material is chemically inert — heat resistant above 220°F. Sterilization greatly simplified

Standard polyethylene can be used only up to 140°F, this temperature representing the limits before deformation. In its irradiated form, the plastic material will withstand temperatures as high as 350°F without melting.

Because of its inert, non-toxic nature, irradiated polyethylene can be used as a liner for food processing tanks and kettles where temperatures up to 220°F are encountered. Lightweight structures of the material may be used for food handling and the film is well adapted for food packaging.

The new material, known as Agilene-HT, consists of ordinary polyethylene which has had its molecular structure and such properties as its heat resistance and tensile strength altered by subjection to a bombardment of sub-atomic particles of high energy. The material, however, is not radioactive in any manner whatsoever. Limitations of ordinary polyethylene, such as stress cracking, are eliminated. All the traditionally desirable properties of polyethylene are retained — toughness, flexibility, and impact resistance.



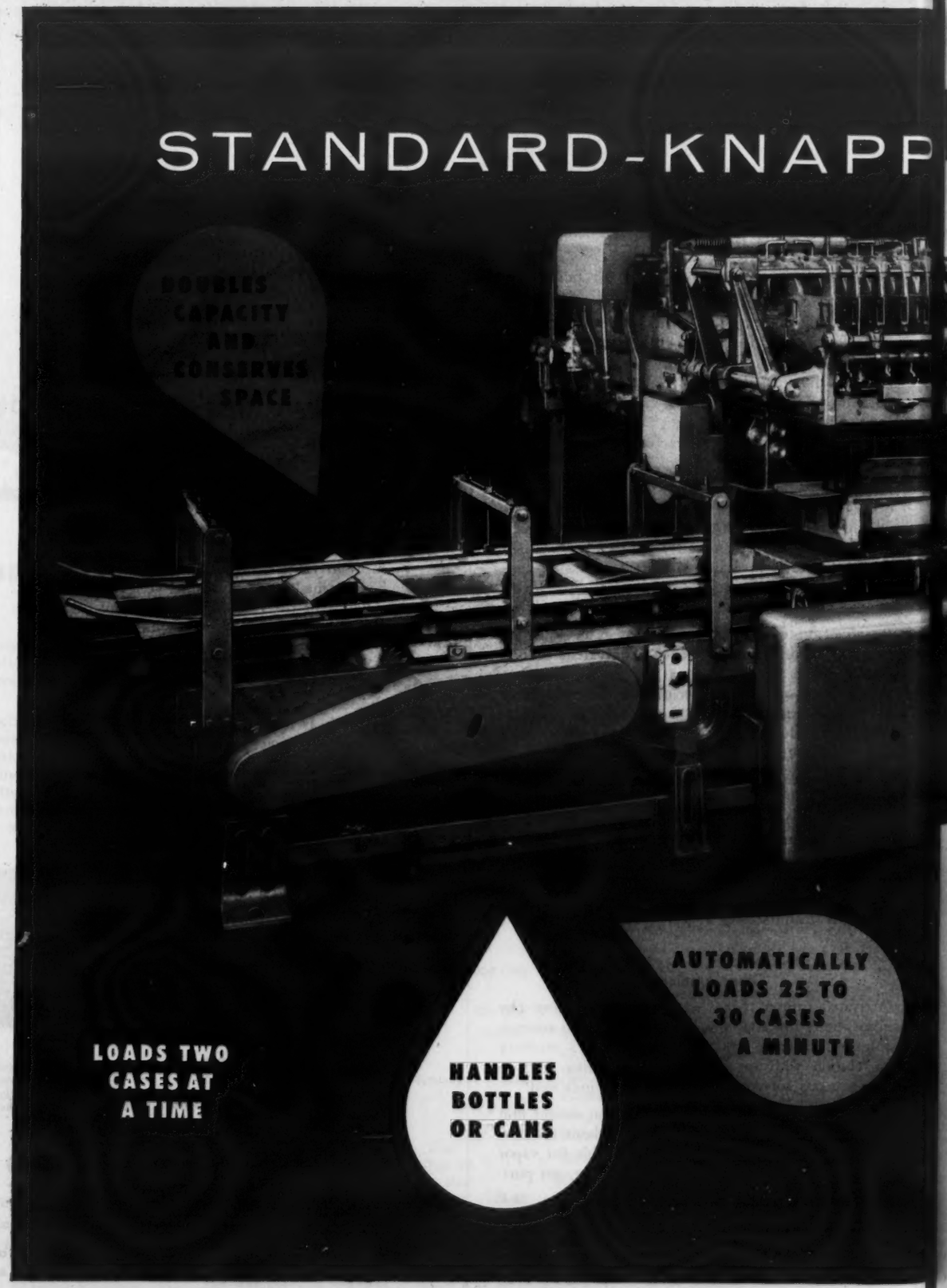
Beakers used in tests of heat resistance of conventional and irradiated polyethylene. From left to right: conventional polyethylene beaker at room temp; after 3, 6, 8, and 10 min exposures to 300°F; irradiated polyethylene beaker (right) after 1 hr at 300°F

Sterilization of irradiated polyethylene trays, carboys, and drums (as well as vessels lined with the material) is greatly simplified. Containers can be re-sterilized after use in approximately 1/10 the time required for similar containers which when dented, require long, vigorous cleaning.

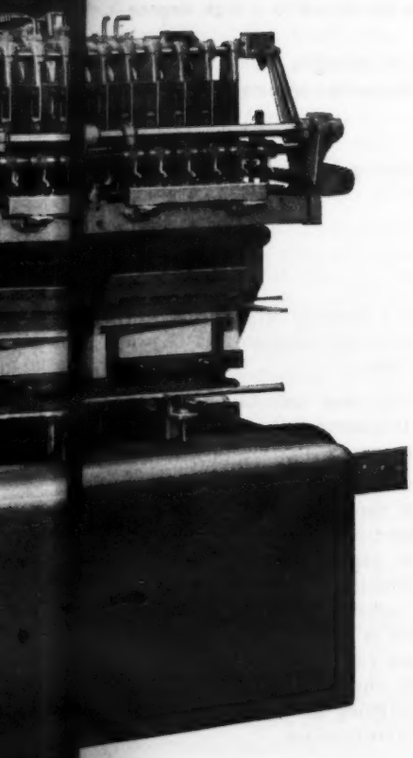
Although Agilene-HT does not melt at comparatively high temperatures, continuous application of heat should be limited to temperatures not too high above those of boiling water. This is particularly so for self-supporting structures since the material becomes elastic under load at higher temperatures.

Present restrictions in equipment limit structure size to vessels of about 30 gal capacity, but developments underway indicate that larger structures will be irradiated in the future. The most satisfactory method of heating is by immersion units as direct heat sources tend to char vessels of Agilene-HT.

The material is presently available in standard


STANDARD-KNAPP
DOUBLES CAPACITY AND CONSERVES SPACE
AUTOMATICALLY LOADS 25 TO 30 CASES A MINUTE
LOADS TWO CASES AT A TIME
HANDLES BOTTLES OR CANS

DUPLEX PACKER



You don't have to push out a wall, build an addition or crowd aisles to get more capacity. The DUPLEX (model 830) loads twice as many cases a minute as a standard unit, but uses only a single conveyor for case intake and discharge. It's designed to double capacity in a minimum amount of space.

The DUPLEX will case up to #10 size can; and bottles from 8 oz. to 32 oz. Its amazing speed of 720 containers a minute is coupled with smooth and gentle handling. Bottles are not damaged, cans are not dented. You can count on dependability, top performance at peak production periods and a minimum of downtime.

To pack more profit into every case, get full details on the MODEL 830 DUPLEX PACKER by writing Dept. D, Standard-Knapp, Division of Emhart Mfg. Co., Portland, Connecticut.

STANDARD-KNAPP

Division of Emhart Mfg. Co.

PORTLAND, CONNECTICUT

Only the best is good enough

When inquiring check FP 1718 on handy form, pgs. 2-3

laboratory ware items — rods, sheets, block, pipe, and tubing — and in the form of custom fabricated items of limited size.

Illustration shows (from left to right) conventional polyethylene beaker at room temperature, then in sequence after three, six, eight, and ten minute exposures to 300°F. At extreme right is irradiated polyethylene beaker after one hour at 300°F.

(Agilene-HT irradiated polyethylene is a development of American Agile Corp., Dept. FP, 5461 Dunham Road, Maple Heights (suburb of Cleveland), Ohio . . . or for more information check FP 1719 on the convenient Reader Service slip located between pages 2 and 3.)

Orange juice squeezed in Florida — packed in paper cartons in N. J.

Hauled 1400 miles in new-type insulated "plastic-tank" trailers at 35°F

Tank truck in photo is one of ten now hauling natural fresh orange juice, 100% pure, from Miami to Newark for packaging in 1 qt consumer containers. Borden is now distributing the packaged juice under brand name of "Orange Blossom" in New York and New Jersey areas. This is the first time that fresh, natural orange juice has been so packaged in the North.

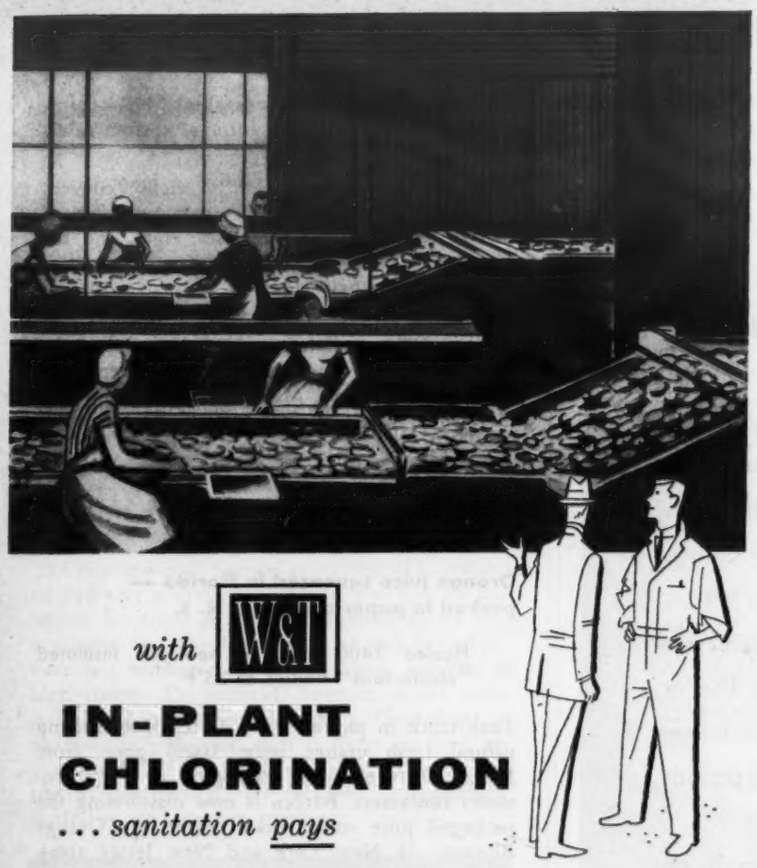
Orange juice tanker has stainless steel inner shell covered with plastic-impregnated balsa wood. Capacity is 3750 gal

Tree-ripe fruit is picked and squeezed the same day on special equipment in plants of Florida Juice, Inc. Juice is immediately chilled to 34°F and transferred to special "plastic-tanks" used with the bulk trailers.

Run to Newark is made in 40 hours and tank insulation holds juice at close to 35°F until delivered. This temp helps to hold fresh flavor and retain about 94% of original vitamin C content. Juice is just three days old when purchased by consumer.

("Plastic-type" tank trailers are built by The Heil Co., Dept. FP, 3000 West Montana, Milwaukee 1, Wis. . . . or for more information check FP 1720 on handy form, pages 2 and 3.)

(For information on fiber cartons, see article in Packaging Section, page 43.)



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IN-PLANT CHLORINATION

... sanitation pays

1. *By cutting average time spent on plant cleanups by more than 33%*
2. *By greatly reducing product spoilage caused by bacteria*
3. *By virtually eliminating all off-odors and slime on equipment and floors*

The list of benefits could go on and on. Many food processors are constantly discovering new benefits particularly related to their own processing operations. Essentially they all tell the same story:

"In-Plant Chlorination means lower operating costs and higher production efficiency."

Important, too, is getting the best "know-how" and equipment on the job. Wallace & Tiernan's nationwide field organization offers expert technical assistance, and W&T dependable chlorination equipment offers "expert" performance. For information on how In-Plant Chlorination by W&T can make *your* sanitation pay, write our Foods Division.

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When inquiring check FP 1721 on handy form, pgs. 2-3

Ideas gleaned from
- research
- other industries
- managerial practices

new direction to taste testing

Classifies consumer population into ten taste-reactor groups

Indicates that food likes and dislikes of each group may be correlated to a high degree

Suggests possibility of selecting taste panel to proportionately represent consumer taste-reactions

Points way for modifying foods to suit 'problem' tasters

ARTHUR L. FOX,
Research Director
Colgate-Palmolive Company
as reported by **FP staff**

Estimating the degree to which the opinions of a small group of taste-testers represent the actual taste preferences of the entire consumer population is a tricky job. No matter how expert the tasters, the fact remains that individual tastes differ. "In what manner" and "to what degree" remain big unknowns.

A significant step toward providing the answers to these questions has been initiated through a "taste-reactor" test, by which individuals can be classified into 10 objective taste groups. Test results show that the likes and dislikes of one group (representing 26% of the 1062 persons tested) inclined heavily toward liking all of a list of certain problem foods (including spinach). Another category in the grouping (representing over 17% of the total) showed a marked tendency of members within the group to dislike most of the same foods.

The reaction of individuals to the tasting of two harmless chemicals—each of which tastes differently to different persons—forms basis of the taste-reactor classification system. Paper, impregnated with phenylthiocarbamide, is first given to each taster, and his reaction (bitter or tasteless) classifies him in the first broad grouping. He then tastes sodium benzoate. His taste reaction of sweet, salt, bitter, sour, or tasteless then further classifies him in a second category, giving the total of ten groups.

In tests of over a thousand persons, a pattern of taste classifications emerged, as shown by the table below.

Note that 2.6% were taste blind to both chemicals, while none fell into the tasteless-bitter category.

Four of these ten classifications contain over 76% of those tested. "In bringing out a new food or beverage," it was explained in a paper given by Dr. Fox before the American Chemical Society in New York, "care should be taken to be sure it is acceptable to the four major groups." Likewise, taste panels should have representatives of the various classes, with preference weighing given to those in the four major classifications.

Broader applications possible

Further study of the taste reactions of individuals could reveal information of new value and direction to food manufacturers. For instance, new markets could be

TABLE

Phenyl thiocarbamide	Sodium Benzoate	Number	Percent
Bitter	Salty	273	25.7
Bitter	Sweet	194	18.3
Bitter	Bitter	186	17.5
Tasteless	Salty	154	14.4
Tasteless	Sweet	86	8.1
Bitter	Sour	76	7.2
Bitter	Tasteless	58	5.5
Tasteless	Tasteless	28	2.6
Tasteless	Sour	7	0.7
Tasteless	Bitter	0	0.0
	Total	1062	100.0

Tabulation of reactions of 1062 persons to the "taste-reactor" chemicals

tapped for existing foods if it were discovered that one of the major taste groups did not react favorably to a manufacturer's pickles, cottage cheese, carbonated beverage, etc. Formulation changes then could be sought which would make the product more acceptable to all groups. Or, a companion product could be introduced which would have an immediate, made-to-order market—one, incidentally, that could almost be statistically predicted on basis of the above taste preference distribution.

A re-examination of existing products, to see into which category of tasters the product gains preference is another possible use for this method. Such studies could possibly result in "tailoring" future flavor formulations to satisfy the flavor preferences of a greater number of consumers.

Make-up of taste panels could be simplified, when more complete data are gathered concerning taste-categories. With enough data as background, it is conceivable that application of this method of taste-preference cataloging could allow a relatively small taste panel to determine the ultimate consumer preference to a new formulation—with more accuracy and simplicity—than many present large-scale consumer tests.

(Above report is based on studies by Dr. Arthur L. Fox, Research Director, Colgate-Palmolive Co., Dept. FP, 105 Hudson St., Jersey City 2, N. J.)

Beer pasteurized but "burned" by radioactive cobalt

Canadian workers at the John Labatt Brewery in London, Ontario have succeeded in pasteurizing beer with radiation from cobalt 60 but the process alters the flavor markedly. Five and a half hours exposure to 60 curie gamma source was required to effectively kill bacteria and stop yeast action — a dosage of 55,000 roentgens. This process lightened the beer color about 30% and produced the sour, burnt odors of "sunstruck" beer. Taste change was not as pronounced but was readily apparent. Fifty percent of the organisms were killed in the first hour but a significant number still survived after four hours exposure. It was also found that present costs are not competitive with conventional heat pasteurization.

(This work was reported on in Vol 3, No. 8, Canadian Isotope Newsletter, published by Isotope Products, Ltd., Dept. FP, Oakville, Ontario, Canada.)

Automation — "how new is it?"
see discussion — page 6

How Taylor *protects* the high quality of its famous wines

Some food processors put up with pipeline corrosion simply because they've come to think of it as a part of the business.

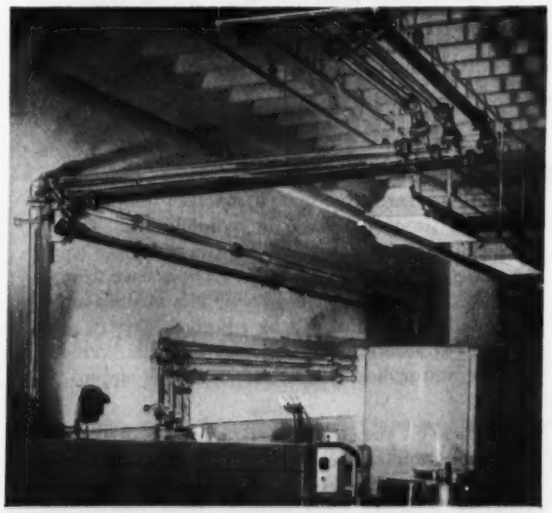
The foods they process contain acids or salt. "They corrode equipment; always have, always will."

How a famous winery solved the problem

Taylor Wine Company, Hammondsport, N. Y., takes every possible step to preserve high product quality and purity. But the liquids its vast pipeline system transports contain corrosive fruit acids—and corrosion in pipe lines is a threat to product quality.

Yet here, where pipeline corrosion *could* be a tough problem, you'll find it's no problem at all. *And it's been that way for 25 years;* for it was 25 years ago that Taylor installed its first PYREX brand pipe.

Today over 1½ miles of sparkling 2-inch PYREX brand glass pipe transports the juice of the grape in every step of the wine-making process. And even the original lines look and perform like new. If, using other pipe, Taylor had had to replace the layout *just once* in that time, think of the money they have saved with PYREX pipe.



PYREX pipelines from storage to filters in Taylor Wine Company's plant.

A new kind of "insight"

PYREX pipe is transparent. You see what's inside the line. You're sure the right fluid is going to the right filter, mixer, kettle or filling machine. You *see* when lines need cleaning —and the instant they are clean.

Speaking of cleaning, Taylor's system is typical of the easy method employed by processors of many foods—from top quality wines to maple syrup to mustard. Taylor runs a hot solution of alkaline cleaner through, then rinses with clear, cold water. Lines sparkle. They clean in place. No down time; no tearing down.

Is your plant large enough?

Any plant where corrosive solutions require the replacement of even one line periodically can use PYREX pipe and save. It *never* wears out.

Who installs it?

Whoever does your regular pipeline plumbing can install PYREX piping . . . even if they've never seen glass pipe before. Installation is actually simpler than for many other kinds of pipe. In fact, pipe fitters frequently tell us working with PYREX piping is a pleasure compared with other materials.

A bottling station . . . showing part of Taylor Wine's 1½-mile PYREX pipe system.

You can buy standard fittings (tees, elbows, spacers, and other PYREX units) to complete any kind of layout design. PYREX pipe comes in 1", 1½", 2", 3", 4" and 6" sizes.

What does it cost?

PYREX brand glass pipe is actually the lowest cost, corrosion resistant pipe you can use. Initial cost is favorable. Long service life, low maintenance and no replacement all add savings.

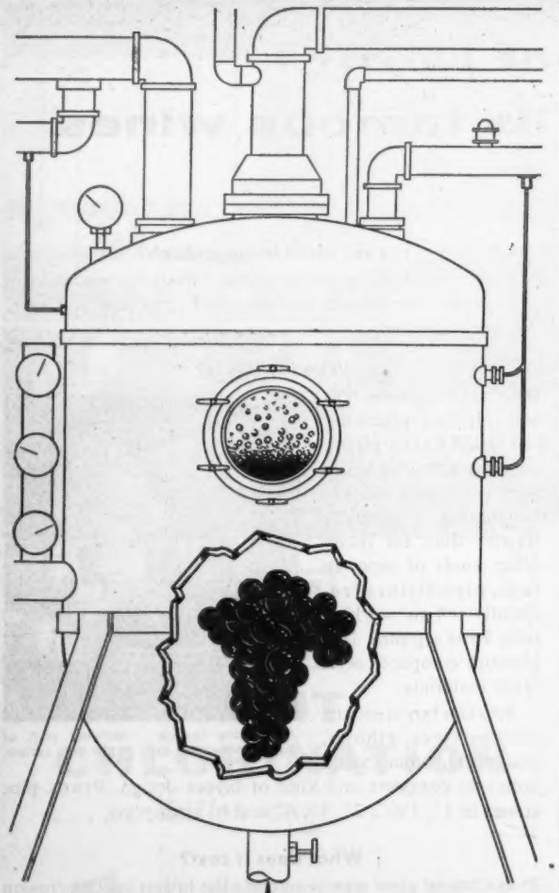
Next Step

We have helpful bulletins telling you more about PYREX pipe in the food processing plants. We'd like you to have free copies. Write or call us for these or just use the coupon below for prompt action on our part.

CORNING GLASS WORKS
Corning means research in Glass

CORNING GLASS WORKS, 41 Crystal Street, Corning, N.Y.
Please send me the printed information checked below:
☐ Bulletin EA-1: "PYREX pipe in the Process Industries."
☐ Bulletin EA-3: Catalog of PYREX pipe and fittings.
☐ Bulletin PE-3: "PYREX pipe installation manual."
Name..... Title.....
Company.....
Address.....
City..... Zone..... State.....

When inquiring check FP 1722 on handy form, pgs. 2-3



Real Fruit Flavors...

WITH THE FUGITIVE AROMAS *CAPTURED!*

• RASPBERRY • STRAWBERRY • CHERRY • GRAPE

• FLAVOREX *real* fruit flavors are constantly gaining wider use in the manufacture of fine foods. These "real" fruit flavors may be used straight or with imitations to achieve extra deliciousness, richness, and character for your product.

Our "Low-Temp" process coaxes out and captures the very last drop of goodness in the fruit. Even delicately elusive, but important volatiles are collected and entrapped.

☆ ☆ ☆

Write for full information and samples. Consult us on flavoring problems.

Also available: Complete line of highly concentrated imitation flavors for all uses.

FLAVOREX CO. INC.
MAKERS OF FINE FRUIT JUICE FLAVORS
302 S CENTRAL AVE BALTIMORE 2 MD

When inquiring check FP 1723 on handy form, pgs. 2-3

Model of adsorbent crystal shows how the arrangement of atoms forms several pores opening into a single central cavity

Adsorbent works by grading molecules according to size

Molecular sieves do much that usual adsorbents can't

A unique zeolite adsorbent has been developed, employing a heretofore unused concept — separation on the basis of difference in molecule size. These adsorbent crystals have central cavities which can only be reached by smaller outer pores. Cavities have strong adsorptive properties but only molecules small enough to pass through pores will be adsorbed. Crystals are tailored to adsorb such molecules as water, carbon dioxide, sulfur dioxide, ethylene, methanol, and many others.

Properties of these "molecular sieves" suggest a number of applications to food processing: removal of impurities from liquids such as vegetable oils; removal of water from oils, or from nearly any organic liquid; removal of ethylene from fruit storage areas; drying of air; package dessicants; water softening.

Adsorbents are made in two sizes — one with a pore opening of about 4 Angstroms (16 billionths of an inch), the other with an opening of about 5 Angstroms. Both are available in either pellet or powder form.

Other features include ability to adsorb most of compound present in small percentage in feed mixture; marked affinity for unsaturated and polar compounds; quick rates of adsorption; heat and water resistance. Adsorbent can be easily reactivated and

NEW **Ejectopump**
COMPRESSED AIR OPERATED

No Crushing of Food Products

NO GLANDS
NO BEARINGS
NO MOVING PARTS

Requires no lubrication

Now, a revolutionary new air-operated displacement pump for food processing. Ejectopumps are designed to eliminate *aeration, churning* and *crushing* of food products. It is ideal for handling such foods as chocolate, sugar syrup, soup, jam, and vegetables or fruits suspended in liquids. For example, the Ejectopump will handle whole grapes, diced vegetables, peas, carrots and corn *without crushing or damage.*

Maintenance problems are practically eliminated because the Ejectopump has *no rotating or reciprocating parts* . . . no bearings, glands, or revolving shafts . . . which require lubrication. It is easily cleaned.

Unlike other air-operated pumps, the Ejectopump is *self-priming* and is easily installed *above* the level of material to be pumped. No special foundation is needed, because there is no vibration problem.

Available in 1½, 2, 3, 4 and 6-in. sizes.

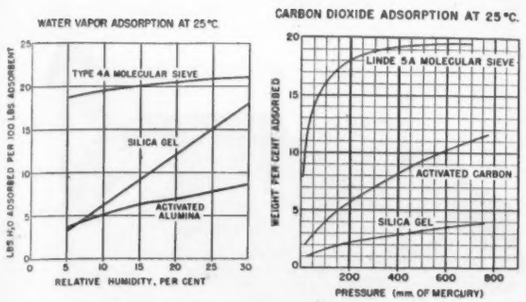
Designed for easy cleaning

Model B4 and B4 SV Ejectopumps are especially designed for food processing. The top of the casing, header and float can be completely removed in a matter of seconds without spanners. This makes complete cleaning and inspection easy.

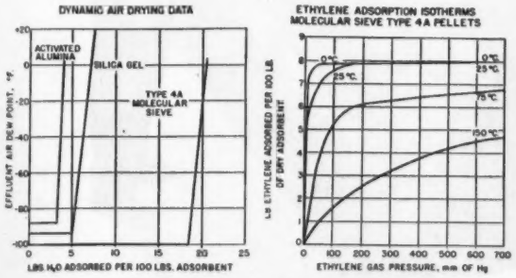
Write today for complete details and prices

FERRO
FERRO CORPORATION
Supplies Division
4183 EAST 56th STREET • CLEVELAND 5, OHIO

When inquiring check FP 1724 on handy form, pgs. 2-3



Molecular sieves are considerably better than conventional adsorbents for adsorbing water (left) as well as carbon dioxide (right)



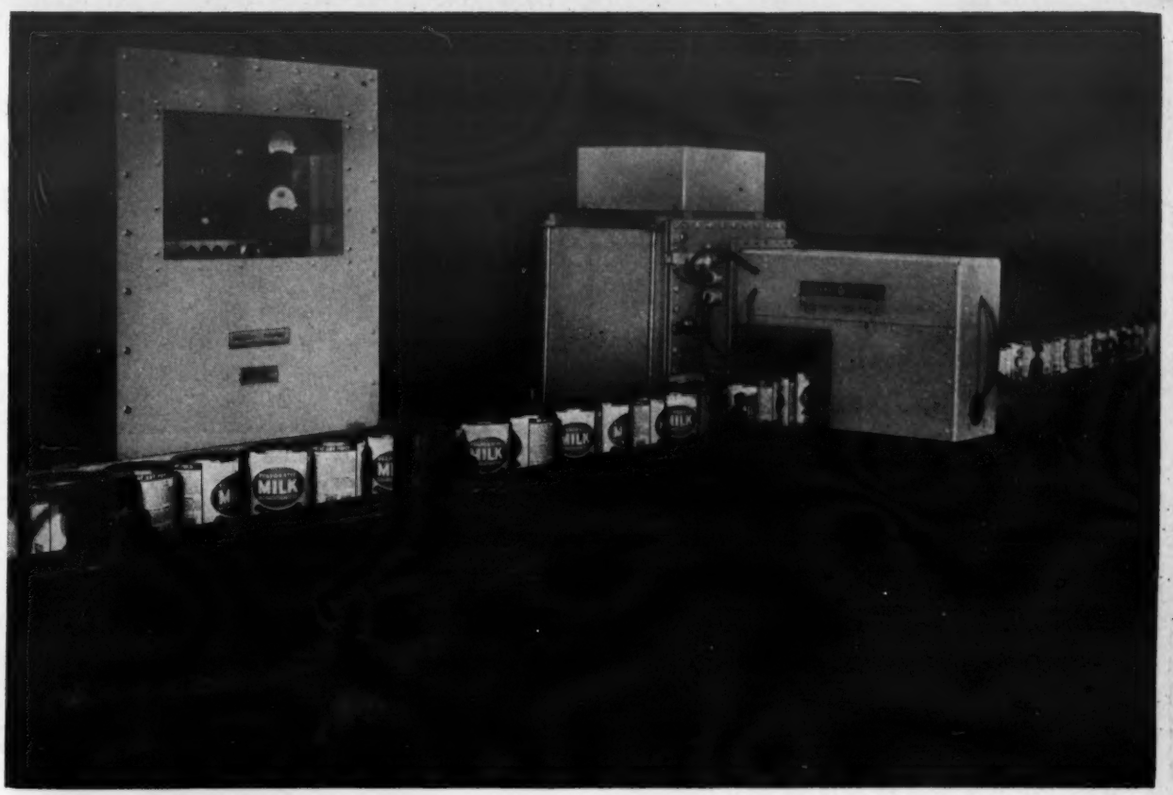
Air for plot at left entered column 30" long at linear velocity of 40 fpm, 1 atm, 25°C, and 6-10% relative humidity. Plot at right shows molecular sieves have high capacity for ethylene even at 150°C

used over again. Adsorbed material is driven off simply by heating and can be reclaimed. Adsorbent will withstand temperatures to 1100°F.

(Molecular sieves are manufactured by Linde Air Products Co., Division of Union Carbide & Carbon Corp., Dept. FP, 30 E. 42nd St., New York 17, N.Y. . . . or for more information check FP 1727 on handy form, pages 2 and 3.)

We're always on the lookout for new ideas . . .

What's more, in reporting new developments we do all the pick and shovel work for you — digging for the pertinent facts and presenting them in time-saving concise articles. Alphabetical Products Directory (pages 78 to 80) "puts the finger" on all these subjects and products in this issue.



HYTAFILL
x-ray monitor

assures your customers full measure . . . saves you expensive overfilling

Now used extensively to check fill of beer, soda pop, baby formula, can and carton milk, juices, etc.

In one of the Midwest's largest evaporated milk plants, General Electric HYTAFILL contributes to quality control. Three of these x-ray monitors inspect level-of-fill for every container . . . automatically reject all those in which the milk level varies beyond narrow predetermined limits.

Food processors everywhere praise the performance of General Electric x-ray monitors. Capable of inspecting up to 900 containers per minute, HYTAFILL protects product quality and reputation by assuring full-measure-fill . . . by spotting "leakers."

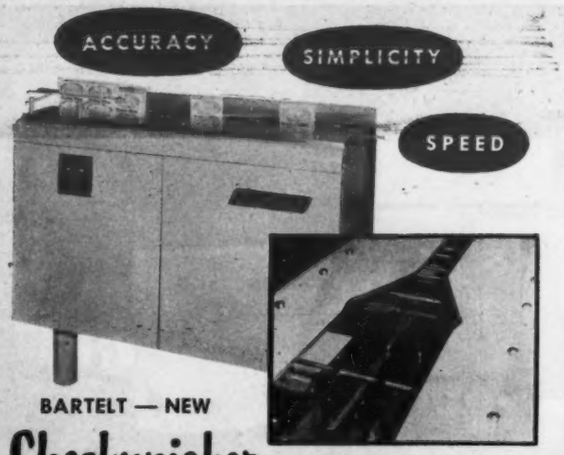
Exceptionally compact, units are readily adaptable to existing conveyor lines. No costly installation problems. What's more, they can be leased or purchased. Tube head and detector are completely sealed, can be washed with steam or hot water. Control panel can be placed anywhere within 50 feet of conveyor line.

HYTAFILL is just one of the ways General Electric X-Ray serves industry. For an expert appraisal of your particular needs, call your G-E x-ray representative or write direct. X-Ray Department, General Electric Company, Milwaukee 1, Wisconsin. For full details on HYTAFILL, ask for Bulletin BC14.

Progress Is Our Most Important Product

GENERAL ELECTRIC

When inquiring check FP 1728 on handy form, pgs. 2-3



BARTELT — NEW

Checkweigher The Bartelt Checkweigher can *save you money* by assuring accurate weights without delaying production. It checkweighs containers at speeds up to 130 per minute, automatically rejecting off-weights to pre-selected weight differentials as accurate as plus or minus 1/60 of an ounce. Trouble-free performance, and low operating and maintenance costs are assured by the simplicity of construction. Let us send you all of the facts.

Write for folder today!

by BARTELT ENGINEERING COMPANY ROCKFORD, ILLINOIS

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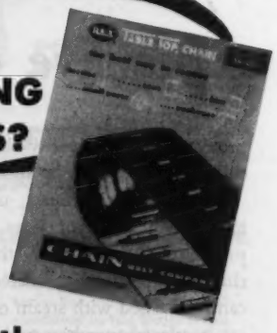
GOT CONVEYING PROBLEMS?



NEW TABLETOP catalog has the answers...

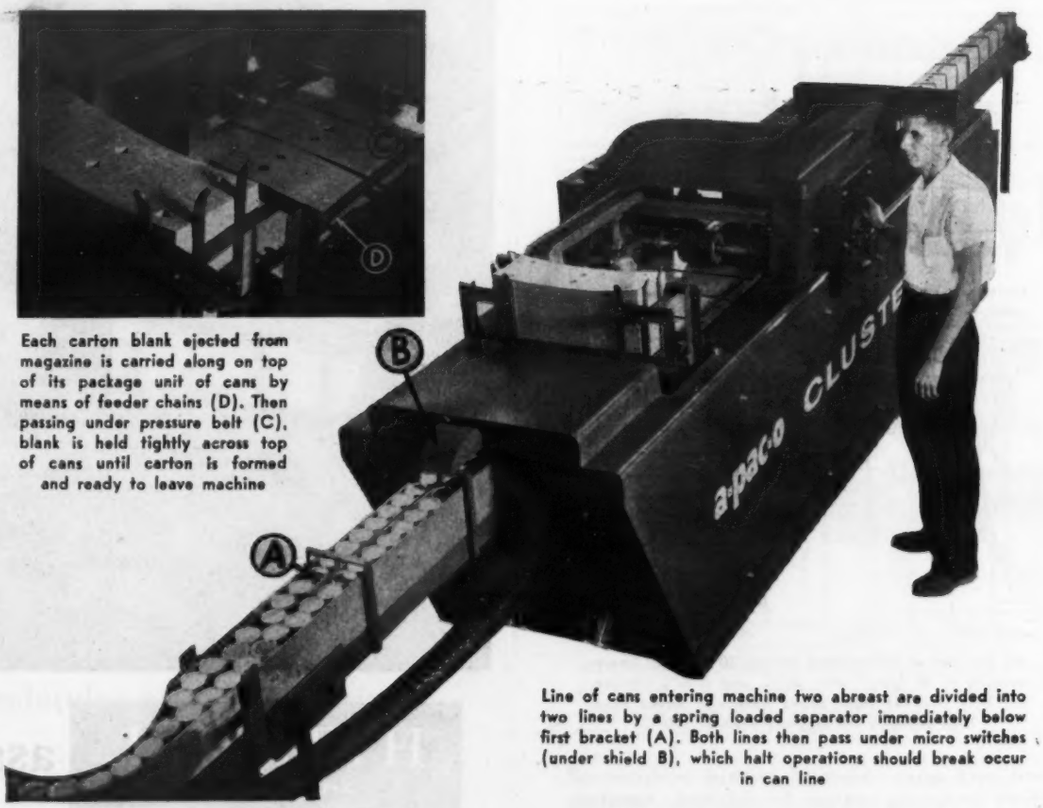
on conveying cans, bottles, jars, cartons, or parts of small size. Illustrated. Describes all advantages of TableTop's® simplicity...how it lowers maintenance cost...speeds handling...helps reduce conveyor costs. Also sections on REX® FlexTop, Rex Crescent Top, Rex PlateTop and Rex Double-Flex Chains. Mail coupon for your copy

REX CHAIN BELT COMPANY
Milwaukee 1, Wisconsin

Chain Belt Company 55-108
4699 W. Greenfield Avenue
Milwaukee 1, Wisconsin
Please send me TableTop Bulletin 54-60
Name.....
Company.....*Dept*.....
Address.....
City.....*State*.....

When inquiring check FP 1730 on handy form, pgs. 2-3

Each carton blank ejected from magazine is carried along on top of its package unit of cans by means of feeder chains (D). Then passing under pressure belt (C), blank is held tightly across top of cans until carton is formed and ready to leave machine



Line of cans entering machine two abreast are divided into two lines by a spring loaded separator immediately below first bracket (A). Both lines then pass under micro switches (under shield B), which halt operations should break occur in can line

no glue— no staples

Automatic machine quickly "interlocks" carry-home carton around cans from 6 oz to 1 qt size in 2 x 2 or single file groups

Canned carbonated beverages, citrus juices, processed foods, and beer can be automatically wrapped in carry-home cartons without use of glue or staples. Machines, which are made in five frame sizes, achieve speeds of up to 900 cans per minute, depending on size and arrangement of cans.

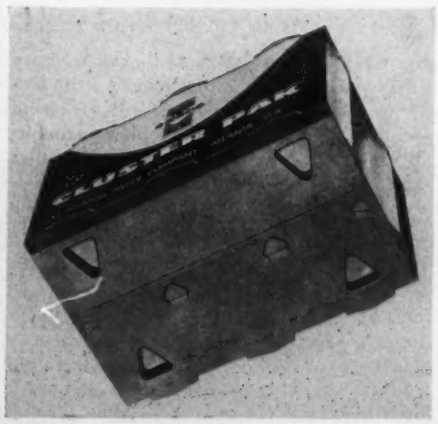
Teflon covered fingers group cans into package units. Then, as each group of cans and its carton reach the automatic folders protruding ends of blank are turned down flush at sides of cans. Next flaps are folded against bottoms of can and die-cut tongues are locked into perforated slots. Each machine adjusts quickly to several can sizes and groupings. The importance of this feature is borne out in marketing studies of canned food, citrus fruit, and brewing industries. In each of these fields, ounce size and number of units per package is changed rather frequently in an effort

One machine handles 6, 9, 10 oz cans and smaller in single file or two by two

to determine and satisfy consumer preferences.

All-in-all, the five frame sizes provide for handling ten different combinations of units, ranging from 2 to 12 cans, either in single file or 2 x 2 in size range from 6 oz to 1 qt. Each frame size handles a portion of the range. For example, machine with

(*Continued on page 42*)



No staples or glue are used in locking carton around cans; rather die cut arrows in under flap engage perforated slots in "upper" bottom flap to lock carton securely

A GRADE FOR ALL CANNING TEMPERATURES
RESIN-BASED FOR QUICK TACK AT HIGH SPEED
Swift's
HOT PICK-UP GUMS
GRADE WR • WIDE-RANGE CANS
GRADE C COLD CANS 35° - 75° F.
GRADE N NORMAL CANS 60° -120° F.
GRADE H HOT CANS 130° -150° F.
GRADE WR WIDE-RANGE CANS 45° -130° F.
ADHESIVES

SWIFT'S PICK-UP GUMS SERVE EVERY LABELING NEED

Whether you're labeling at 35° or 150°, on terne plate, tin cans or glass . . . at 100, 200 or 400 cans per minute—*Swift's* new label is news for *your* labeling requirements.

Built for speed, Swift's new, improved Hot Pick-Up Gums are resin-based for instant grab . . . come in convenient chunk form for quick, uniform melt down and easy use. From Grade C (cold cans) to WR (wide-range), there's a grade to meet your canning temperature and speed requirements.

As smooth machining as they are versatile, Swift's Pick-Up Gums do not string or build up. They're strong on tack, non-foaming and *long* in mileage economy.

Remember, too, that Swift's adhesives and glue products serve packing and packaging needs in all phases of the food industry. From labeling to shipping, to *easy* opening, the name *Swift* means quality, service and dependability.

SWIFT's Lap End Pastes. Fast machining, quick, strong tack—for a wide variety of label stocks. Rust inhibited, water resistant, and resins for difficult surfaces.

SWIFT's Easy-Open case sealer. No opening tools required . . . tug breaks the seal.

SWIFT's Evertite glass labeling adhesives. Three grades serve wide range of machining and label stock requirements. Write today for the new bulletin on Swift's quality canning adhesives.

Swift ADHESIVES

Another of Swift's Products for Industry

USE THIS COUPON FOR FURTHER INFORMATION

SWIFT & COMPANY, A-8
Adhesive Products Dept.
4115 Packers Ave., Chicago 9, Ill.

Please send further information on the following products:

☐ HOT PICK-UP GUMS ☐ EASY OPEN CASE SEALER
☐ LAP END PASTES ☐ EVERTITE

Company _____

Address _____

City _____ *Zone* _____ *State* _____

Your name _____

When inquiring check FP 1731 on handy form, pgs. 2-3

WHIZ-PACKERS

FILL ANY SIZE — ANY TYPE PACKAGES

Faster — More Accurately

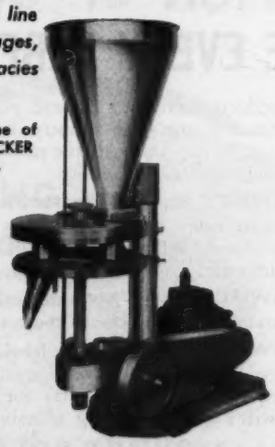
for DRY PRODUCT PACKAGING: POWDERS • NUTS • CRYSTALS • CANDY • SEEDS • TEAS • COFFEE • FROZEN FOODS • BEANS • SPICES • SOUP MIXES • PEANUTS • POPCORN ETC.

NOW Available—
A Complete Line of WHIZ-PACKER Automatic—Semi-Automatic, Net Weighing and Volumetric Package Filling Equipment and Accessories.

Meet your production requirements with WHIZ-PACKER

Speed up your production line
Fill any size, any type packages,
With the best of accuracies

BENCH MODEL—One of the many WHIZ-PACKER Filling machines.



FLOOR MODEL

Send product sample and package for model recommendation, complete details and prices. No obligation of course.

2312

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EXCLUSIVE DISTRIBUTORS
EASTERN STATES
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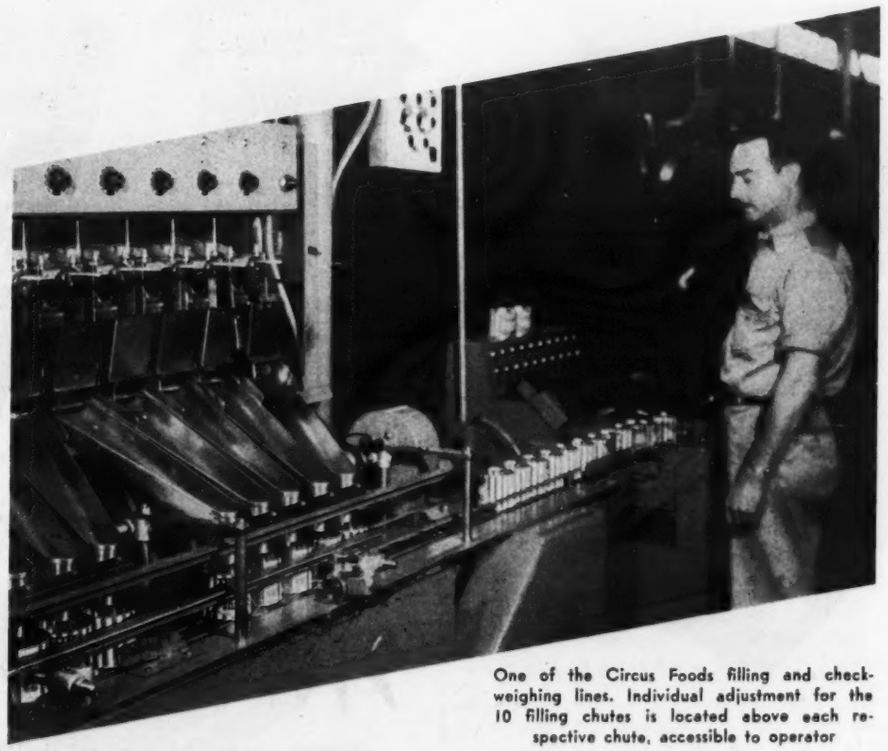


One of the Circus Foods filling and check-weighing lines. Individual adjustment for the 10 filling chutes is located above each respective chute, accessible to operator

Mixed sizes and shapes of nuts necessitated overfills up to ¾ oz. Now, gravimetric filler, automatic checkweigher team up to

save overweight losses, prevent underfills

EDWARD H. JENANYAN,
President, Circus Foods Co.
as reported by **FP Staff**

Problem: Nut meats — particularly salted mixed nuts for vacuum packing — represent a relatively expensive commodity. Overfilling by as much as ¾ oz per 16 oz can means thousands of dollars of product loss annually. At Circus Foods Co., San Francisco, this loss was becoming impressive as annual sales continued to mount.

Volumetric filling was being used. Several girls, stationed along a conveyor below filler, would checkweigh cans to make sure that no underweights were delivered to trade. Mixed nuts, the most expensive item packed, were particularly troublesome. Because of the variations in size, they tended to fill and level off at different weights per measuring cup. Settings on the filler — which were made high enough to prevent underfills — also resulted in substantial amounts of overfills.

Solution: Volumetric filling has been replaced by automatic net-weight filling system, coupled with automatic checkweighing. The two units work as a team. Filling machine is preset to fill within range of +⅛ oz, to a near-zero tolerance. Each can passes over the checkweigher; any underfill is routed into a by-pass track. Line operates at 96 to 100 cpm.

On filling machine, an automatic brush gate prevents any spillage from feeder trough after com-

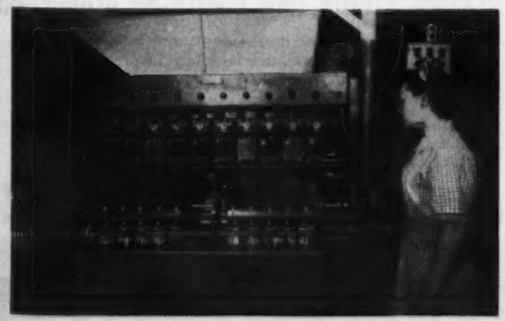
Electronic checkweigher signals operator when an underweight occurs, shunts it into by-pass line

pletion of weighing. Vibrator-feeder is designed to give gentle motion to product. Fall of nut meats does not exceed 3½". Incline of discharge spouts is set at 32°, so nuts do not stick or block, but at same time don't drop with sufficient force for breakage. Weight control is accomplished by a mechanical beam and weigh bucket. Vibrating feeder delivers stream of product into hopper. At moment preset weight is reached, scale beam displacement stops vibratory feeder and engages brush gate.

All vibrator and scale controls are accessible to operator at front of machine. Top half of back panel lifts for easy accessibility. Weighings of 4 oz and 8 oz can be handled on same machine. Other models are available for speeds of 40 and 60 cpm. Checkweigher uses a simplified electronic system containing only three electron and photo tubes, in conjunction with a controlled motion scale. A simple flight-bar motion makes possible accurate settings to within 1/30 oz, at 100 cpm rates.

A series of 20 indicating lights (10 red, 10 green), located in a panel on the checkweigher, are synchronized to the ten net-filling stations of filling

(*Continued on next page*)

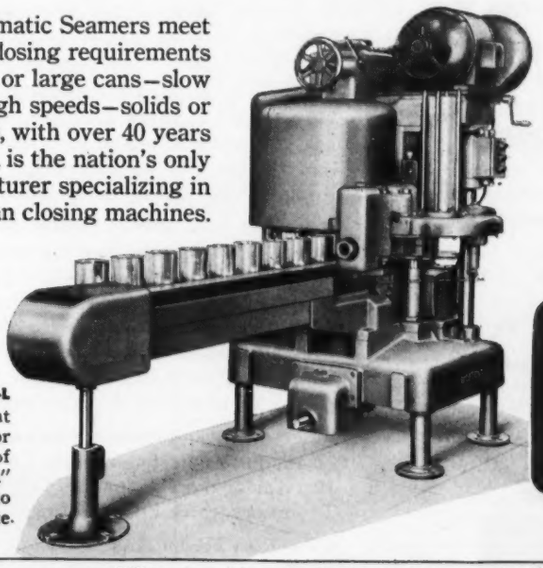


Vibrators on both scale feeders and can filling track help assure uniform fill-weight, even with products of mixed sizes and shapes

Only ANGELUS offers this can closing combination

SPEED • EFFICIENCY • ECONOMY!

Angelus Automatic Seamers meet any round can closing requirements—small cans or large cans—slow speeds or high speeds—solids or liquids. Angelus, with over 40 years experience, is the nation's only manufacturer specializing in can closing machines.



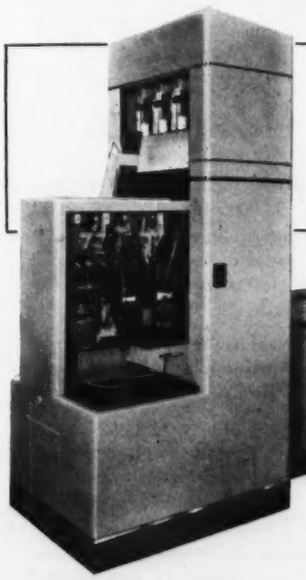
Model 60-L
High-speed, straight line feed seamer for spill-free closing of round cans 2⅛" to 4¼" in diameter—up to 400 cans per minute.

Investigate
the advantages of low cost production, low cost investment, and low cost maintenance with Angelus Automatic Seamers.

Write today
for complete details on models and an Angelus Engineered Application Recommendation.

ANGELUS
Sanitary Can Machine Company
4900 Pacific Blvd. • Los Angeles 58, Calif.

When inquiring check FP 1733 on handy form, pgs. 2-3



Cut Costs with SEALTITE

- Delivers a well settled, nicely squared bag at top, bottom and sides
- Pre-scored, double fold, uniformly glued seal keeps product in and dirt out
- Uses any standard make of gusseted bag — no royalties
- Seal readily opened, yet tamper-proof
- Seals 30 to 50 bags per minute
- Users report costs reduced up to $500.00 per month per machine

Write for complete information

CONSOLIDATED PACKAGING MACHINERY CORP.
BUFFALO 13, N. Y.

When inquiring check FP 1734 on handy form, pgs. 2-3

New! Improved!
CAN-DO
DENTED CAN STRAIGHTENER
NOW SOLD EXCLUSIVELY

by CRCO*
SAY "SEE-AR-CO"

- Straightens all low vacuum dents, restores can to saleable condition.
- Tests for springers and swells.
- Adjusts to can sizes easily.
- Now available for No. 10's.

NO SKILL NEEDED!
Lever holds can between die-ends. Foot pedal controls straightening device.
NO STRENGTH NEEDED!
Pressure on foot pedal does the straightening
BUT YOU NEED IT!
... if you want to cut dented can loss.

The improved CAN-DO pays for itself in no time and up go your profits. Write for complete data.

THE BEST OF Everything
CHISHOLM-RYDER CO. INC.
Niagara Falls, New York
FOR THE FOOD PROCESSOR

When inquiring check FP 1735 on handy form, pgs. 2-3

(*Continued from preceding page*)

machine. When a low tolerance can is detected by automatic weigher, a red light — corresponding to the station which filled the can — flashes on. This not only facilitates close adjustment of the individual weigh stations, but also allows operator to observe operation of the equipment during course of ordinary production, and to make small adjustments, should they be needed.

Results: Coupling checkweigher with filler provides higher-accuracy filling, which results from use of narrow filling-range settings, and at same time, assures that no underweight cans ever "slip through" the packaging operation.

Circus has been able to average their total production at 1/16 oz over, for the 8 oz can. Savings on overfilling alone will allow pay-off of entire line change within two years. Absence of manual check-weighers contributes to lower operating costs. Broken nuts are avoided, so the quality factor is higher. Scale is also so accurate that Circus does not bother to remove the extra nuts in the overfills.

(Illumi Tronic Automatic Checkweigher is product of Illumi Tronic Engineering Co., Dept. FP, 680 East Taylor Ave., Sunnyvale, Calif. . . . or for more information check FP 1736, pages 2 and 3.)

(Vibratory Feeder Scale, Model G, is manufactured by Parsons Automatic Scale Co., Dept. FP, 1827 Fifth St., Berkeley 2, Calif. . . . or for more information check FP 1737, pages 2 and 3.)

No Glue

(*Continued from page* 39)

a standard No. 3 frame will handle 12, 16 oz, and No. 1 and 2 cans in 2 x 2 arrangements of 4 and 6 cans. (Like all the other machines, it will handle single-line packs. Use of glue, optional in 2 x 2 groupings, is, however, necessary on any machine turning out single-file units.)

No. 3 frame machine is a little over 14′ long and 3′ wide. Overall length, with intake conveyor is just under 20′. Intake conveyor can be curved, if necessary, to save space.

One of the several advantages of the cartons developed for these machines is use of all-kraft stock in making the blanks. It provides greater strength and has superior water resistance for better storage under refrigeration. Handle is integral with blank. However, cartons with finger holes are also handled on the machine.

Only one operator is required and he can easily vary speed of machine to suit changing conditions.

(Cluster-Pak machines and cartons are available from Atlanta Paper Company, Dept. FP, P.O. Box 4417, Atlanta, Ga. . . . or for more information check FP 1738 on handy form, pages 2 and 3.)

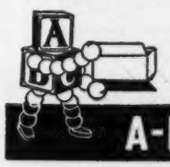
Save FLOOR SPACE and LABOR

with A-B-C SHORT CASE SEALER

Save two-thirds of your valuable floor space with the A-B-C Short Case Sealer—with increased packaging efficiency, more speed, less expense . . . Automatically glues, folds and seals either or both top and bottom flaps of shipping cases in one operation. Made in eight models to fit any production requirement. Hot air heaters dry the glue in one-half the time. Speeds up to 30 cases per minute.

TOP QUALITY CASE HANDLING EQUIPMENT

Whatever your packaging job, A-B-C has a production proved machine for you—case sealers, unloaders and unscramblers, side sealers, and hand gluers.



WRITE NOW FOR DETAILS AND FLOOR PLANS

A-B-C PACKAGING MACHINE CORP. QUINCY, ILLINOIS

When inquiring check FP 1739 on handy form, pgs. 2-3

Increased Profits thru controlled production

You don't have to play a guessing game with production count when Productimeters are installed on processing machines to give you the exact count!

They eliminate profit-eating "guess-work"...save valuable time...provide accurate records for all departments. Model 6-HF-3-1 Can Counter on Sealing Machine (above) is one of many installations adapted for food packing plants.

Send for Catalog 51

DURANT MANUFACTURING COMPANY

1951 N. Buffum Street, Milwaukee 1, Wisconsin
131 S. Water St., Providence 3, R. I.
Representatives in Principal Cities

PRODUCTIMETERS
SINCE 1879 — Count Everything

When inquiring check FP 1740 on handy form, pgs. 2-3

A BETTER CLOSURE for SMALL PAPER BAGS

UNION SPECIAL'S Style 60000 D bag closing machine, producing the exclusive Dubl-Tape closure, is designed to speed packaging . . . cut costs . . . and improve appearance.

- **FAST—Speed to match output of standard filling and weighing equipment.**
- **NEAT—Produces an eye-pleasing, sales-stimulating package with high merchandising value.**
- **ECONOMICAL—Operating cost per bag is at a minimum . . . uses inexpensive cotton thread and paper tape.**
- **VERSATILE—Adjustable for a wide range of bag sizes, short or long runs.**

Write for BULLETIN No. 100 to get the complete facts on this machine . . . and how it can do a better closing job for you.

Union Special MACHINE COMPANY

432 N. Franklin Street • Chicago 10, Illinois

When inquiring check FP 1741 on handy form, pgs. 2-3

CUT PACKAGING COSTS with a TRIANGLE WEIGHER-FILLER

▼ If your packaging operations involve the weighing and filling of dry products into bags, boxes, cans or jars —there is a Triangle Elec-Tri-Pak designed to do your job and cut your costs. From low cost table model to automatic, high speed units, there is a versatile weighing and filling machine for every need—for every purse.

Check these Features: Automatic Weighing and Filling • Accurate Finish Weigh • Gentle Handling • Simple, One-man Operation • Low Cost.

Send for bulletin.

TRIANGLE PACKAGE MACHINERY CO.

6638 W. Diversey Avenue, Chicago 35, Illinois

When inquiring check FP 1742 on handy form, pgs. 2-3

Fresh orange juice now in paper milk cartons

Conventional disposable paper milk cartons have been modified for packaging of fresh orange juice. Carton has been tested in eastern seaboard markets with success. Juice is packed in Florida, has been shipped as far north as New England, stays fresh more than 10 days. (Also see article on page 33 on shipping method.)

(Paper cartons for orange juice are manufactured by the American Can Co., Dept. FP, 100 Park Ave., New York 17, N.Y. . . . or for more information reader may check FP 1743 on the convenient Reader Service slip on pages 2 & 3.)

Beer that glows in the dark?

This beer glows in the dark—at least its carton does. Cleveland-Sandusky Brewing Corp., Cleveland, are using this six-can carrier with the brand design printed over background colors of Day-Glo inks. Total of four background colors is used—buttercup yellow, lime green, orange, or magenta—and one carrier of each color is packed to a carton. This permits checkerboard effect for display.

Brewery furnishes black light projectors to bring out fluorescent qualities of the inks for night displays.

(Day-Glo printed six-can carrier is made by American Coating Mills Div., Robert Gair Co., Inc., Dept. FP, 228 N. LaSalle St., Chicago, Ill. . . . or for more information check FP 1744 on handy form, pages 2 and 3.)

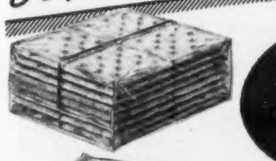
Printing Costs..... ~~$2500.00~~

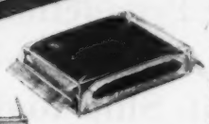
Wrapping Materials.... ~~2500.00~~

New cost—$1250.00

50% savings in materials!

"JUST ONE REASON WHY we're using CAMPBELL WRAPPERS throughout our bakery chain!"





PRESERVES OVEN FRESHNESS — *Prolongs shelf life.* Positive heat or glue and crimp sealing insures sealed in freshness — prolongs sale life of cakes, cookies, crackers, donuts, rolls, pies and other specialties.

SEALS IN FLAVOR — *Increases repeat sales.* Customers can rely on the distinctive flavor of your products always being up to your standard when package-sealed on the Campbell Wrapper.

WRAPS WITHOUT DAMAGE — *Reduces dealer returns.* Cream-filled cookies, pies, or crisp crackers and other products are wrapped without breakage by the exclusive Campbell "float" wrapping method — regardless of product's shape.

HIGH SPEED — *Increases production at lower cost.* Campbell Wrappers are precision made for fast, steady operation — Wrap from 100 to 300 single or multiple item units per minute.

USES ALL WRAP MATERIALS — *No stiffeners unless desired!* Paper, cellophane, polyethylene, foils, and all the new plastic films may be used. Modernize your packaging methods now — Write for complete information.

SAVES LABOR — *Requires no skilled help.* Equipped with automatic feeds, one person often tends and operates several Campbell Wrappers at one time.

Write for this Campbell wrapper booklet — showing how it packages and the wide variety of products it wraps.

Campbell WRAPPER

HUDSON-SHARP MACHINE CO. • GREEN BAY, WIS.

Manufacturers of Aniline and Gravure Presses, Folders, Interfolders, Laminators, Waxers, Embossers, Slitters, Sheeters, Roll Winders, Pack aging Machines, Creepers and Tissue Converting Units.

NEW YORK • 55 West 42nd St.

When inquiring check FP 1745 on handy form, pgs. 2-3

Speed Your Production with Gaylord Boxes . . . Precision-Built to Pack Right, Ship Right

Shipping containers can make or break a modern packing line. If they're not uniform, costly interruptions may occur.

Gaylord shipping containers prevent this danger. Quality materials and control of every manufacturing step result in exceptional *uniformity*. Let Gaylord keep your packing line running smoothly, profitably.

For information and cooperation, contact your nearest Gaylord sales office.

Gaylord Container Corporation

GENERAL OFFICES
SAINT LOUIS, MO.

Gaylord Boxes

SALES OFFICES
COAST-TO-COAST

CORRUGATED AND SOLID FIBRE BOXES • FOLDING CARTONS • KRAFT BAGS AND SACKS • KRAFT PAPER AND SPECIALTIES

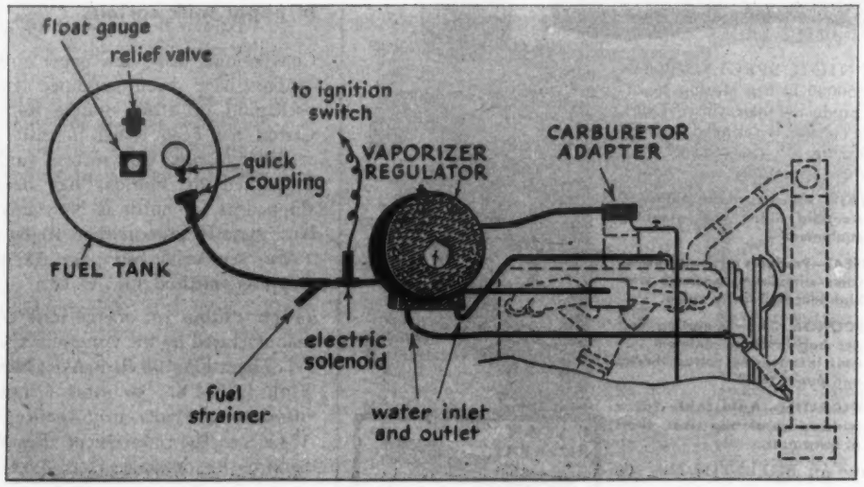


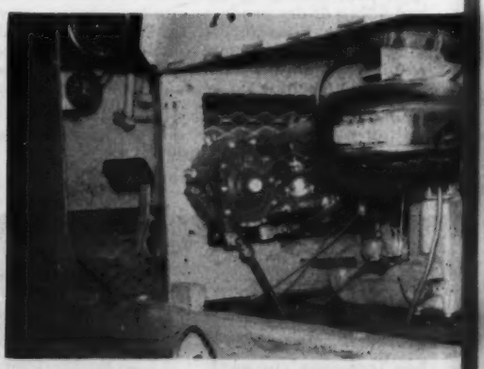
Diagram shows a completed installation of vaporizer-regulator, LP gas tank, and accessories. Note that carburetor adapter is used in place of spud-in

Easy conversion of fork trucks to LP gas operation

nullifies exhaust hazards, cuts maintenance costs

Many companies are finding that their fork trucks are performing better than ever and requiring very little maintenance per hours of operation since switching to LP gas. Reports place savings of many users at several hundred dollars per year per truck through the use of this clean-burning fuel. Downtime maintenance, including replacement parts, labor and oil consumption are all substantially reduced. Even more important, from the standpoint of worker health and comfort, is reduction of noxious exhaust fumes to a negligible minimum. Propane gives off at the maximum about 0.4% carbon monoxide, while gasoline gives off up to 7%.

LP gas tank is strapped securely to cradle. Can be quickly interchanged when empty. Couplings disconnect easily. When pulled apart both ends seal by spring action



Compact vaporizer-regulator requires little space yet has capacity for maximum hp

Experience of the Crown Products Co., Los Angeles, is typical of numerous processors who have changed over. It operates a fleet of four 3000 to 4000 lb capacity trucks to perform handling, storage, and shipping of jams, jellies, bleaches, and other products.

Conversion was made several years ago. Trucks are subject to hard service — running two shifts — 5 or 6 days a week. Plant superintendent says that maintenance costs have been reduced 50%.

A large warehousing company, handling a volume of processed foods, has cut both repair costs and downtime. Teardown of truck engines, formerly necessary every 1800 to 2000 hours, is now required only at 8000 hour periods.

Benefits of these change-overs are due to the characteristics of the gas, plus, of course, carefully engineered conversion components.

Propane has an octane rating of 125 as compared with gasoline's maximum rating of 90. The natural transformation of propane from a liquid state to a dry gas gives it advantages over gasoline. Propane enters the engine carburetor in a completely vaporized form and mixes readily and completely with the air in the system. Full potential energy of the fuel is released in the cylinders and converted to usable power.

Choking during starting is not required. There are no prolonged warmups during which lubrication may be inadequate and cylinder wall washdown is avoided. All these advantages reduce engine wear, contribute to longer oil life, and permit spark plugs to maintain efficiency indefinitely.

All necessary components for conversion are available in kits. Actual change-over is preferably performed by expert service men provided by regional distributors of the conversion units. However, in some instances experienced plant mechanics are trained to handle both installation and maintenance.

Basic components of a typical installation kit include

(*Continued on next page*)

Typical LP gas conversion has been made for Holleb & Co., Chicago, on truck used in warehousing and shipping variety of processed foods

FROM ORANGE GROVE TO RETAILER . . .

It's WHITE All the Way

For LOWER COST TRANSPORTATION of TROPICANA Fruits and Juices

TROPICANA fruit sections and juice concentrates travel all the way from grove to grocer by modern White Trucks.

The reason: Anthony Rossi, president of Fruit Industries, of Bradenton, Fla., knows he can count on White for dependability and thousands of low cost miles every year. His fleet of 40 Whites averages 125,000 miles per truck each year . . . traveling all over the United States . . . on tight schedules because Tropicana sales are going up and these refrigerated products have to move!

For your perplexing transportation problems . . . for trucks tailored to your exact operating conditions—call on White!

THE WHITE MOTOR COMPANY • Cleveland 1, Ohio

White

For More Than 50 Years The Greatest Name In Trucks

When inquiring check FP 1746 on handy form, pgs. 2-3

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GENERAL OFFICES
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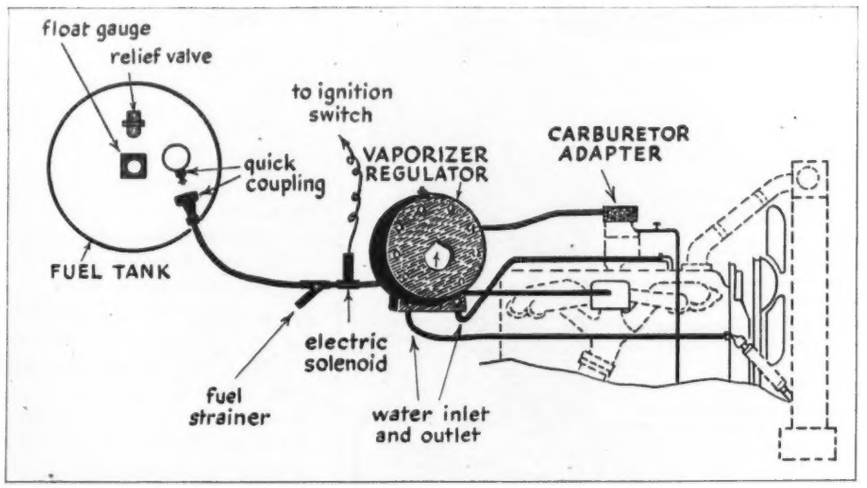
Gaylord Boxes

SALES OFFICES
COAST-TO-COAST

CORRUGATED AND SOLID FIBRE BOXES • FOLDING CARTONS • KRAFT BAGS AND SACKS • KRAFT PAPER AND SPECIALTIES



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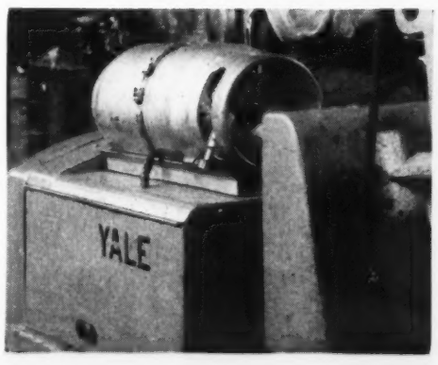

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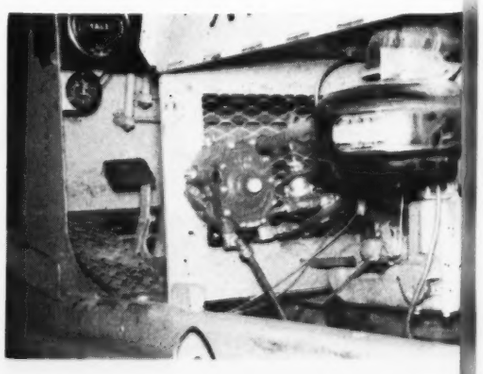

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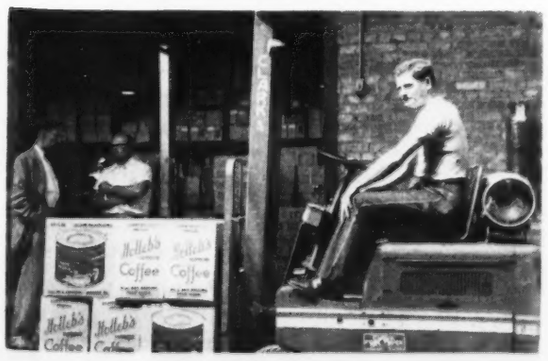

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THE WHITE MOTOR COMPANY • Cleveland 1, Ohio

White

For More Than 50 Years The Greatest Name In Trucks

When inquiring check FP 1746 on handy form, pgs. 2-3

(Continued from preceding page)

a vaporizer-regulator, carburetor adapter, propane filter, fuel and water lines, and fittings. Two tanks are generally provided for each truck.

While LP gas can be fed into the venturi of the gasoline carburetor by means of a spud-in, it involves drilling holes in the carburetor and tapping them so that nipple fitting or "spud" can be screwed in. These operations are unnecessary when using a propane carburetor adapter which is attached to the air horn of the gasoline carburetor.

In some instances a special LP gas carburetor is used and while highly efficient, is much more expensive and not required in most cases.

Vaporizer-regulator used in these kits has both power and idle screws, with no primer or choke. Reference to drawing indicates how propane passes from tank through strainer and solenoid, and into vaporizer-regulator where it is reduced to 5 lb of pressure and converted to dry gas. Necessary heat is supplied by water from the engine's cooling system, which is jacketed through the casting. Gas is thus continuously vaporized. The gas then passes into a secondary reducing chamber at rate dependent upon venturi created demand and power adjustment of screw setting. Vaporized dry gas is then drawn into carburetor.

One of the special features of this vaporizer-regulator is its vacuum lock-off. This insures positive lock-off of fuel in case engines stall with key on. This lock-off permits use of a very light spring in secondary chamber of vaporizer.

The result is a sensitive and efficient secondary regulator responsive to high and low engine speeds. It does not have flat spots sometimes encountered in LP gas operation of fork trucks.

(Complete conversion kits, including Beam 120 vaporizor-regulator, are produced by the Parkdale Company, Dept. FP, 3040 Rosslyn St., Los Angeles 65, Calif. . . . or for more information check FP 1748 on handy form, pages 2 and 3.)

Diesel spark-proof trucks built in 1 ½-2 ton sizes

Safety features include static conductive tires and wooden bumpers

Spark-proof lift trucks are offered in 3000 and 4000 lb capacities, featuring water-cooled, exhaust manifold which is part of standard engine cooling system. Also contributing to spark-proof operation are hydraulic starting motor, mechanical or pressure operated instruments, static conductive tires, and accessories such as wooden bumpers.

(Spark-proof, diesel operated fork lift trucks are built by Buda Div., Allis Chalmers Mfg. Co., Dept. FP, Harvey, Ill. . . . check FP 1749, pages 2 and 3.)

cut handling costs on food processing

Specify DARNELL CASTERS & WHEELS

. . . OVER 4000 TYPES of CASTERS & WHEELS

to choose from— engineered to your exact requirements

RUBBER TREADS . . . a wide choice of treads suited to all types of floors, including Darnelle-prene oil, water and chemical-resistant treads, make Darnell Casters and Wheels highly adapted to rough usage.

RUST-PROOFED . . . by the Udylite process, Darnell Casters give longer, care-free life wherever water, steam and corroding chemicals are freely used.

STRING GUARDS . . . Even though string and ravelings may wind around the hub, these string guards insure easy rolling at all times.

LUBRICATION . . . all swivel and wheel bearings are factory packed with a high quality grease that "stands up" under attack by heat and water. Zerk fittings are provided for quick grease-gun lubrication.

DARNELL CASTERS & E-Z ROLL WHEELS Always SWIVEL and ROLL

Free Manual

DARNELL CORPORATION, LTD.
DOWNEY (LOS ANGELES COUNTY) CALIFORNIA
60 WALKER STREET, NEW YORK 13, NEW YORK
36 NORTH CLINTON STREET, CHICAGO 6, ILLINOIS

When inquiring check FP 1747 on handy form, pgs. 2-3

Heart of the HydroLectric THE DYNA-DUAL POWER UNIT

EXCLUSIVE

This sturdy Dyna-Dual Power Unit out performs all others for ease of operation — dependability — lowest maintenance cost and economy of power. HydroLectrics will keep rolling and moving your materials at lower costs than any truck in its class. Want proof? Complete facts and data on request.

Note: The Dyna-Dual Power Unit is interchangeable on all models.

LIFT TRUCKS INCORPORATED | 2423-31 SPRING GROVE AVE. CINCINNATI 14, OHIO

There is a model for every purpose to handle any kind of material

When inquiring check FP 1750 on handy form, pgs. 2-3

Cyclone Belt plays "milkman" offers fast, never-fail delivery

• A leading manufacturer of automatic milk-vending machines was plagued with "delivery" problems due to frequent breakdowns of the delivery mechanism. Then he called in an experienced Cyclone belt engineer. The result was a fine mesh, light weight Cyclone Conveyor Belt that does a quick and efficient job—every time.

Perhaps *you* are having difficulties with automatic handling—or with slow and costly manual handling. If you are, let one of our engineers analyze your problem and show you how the right Cyclone Belt can help you save a lot of time and money. Write to Dept. K-15 for your free copy of Catalog #5 which shows Cyclone Belts in action in all kinds of jobs.

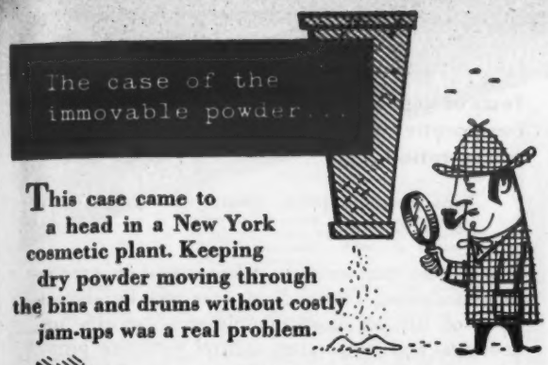
USS CYCLONE METAL CONVEYOR BELTS
SPIRAL WOVEN • FLAT WIRE • FLEX-GRID

CYCLONE FENCE DEPARTMENT
AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL CORPORATION
WAUKEGAN, ILLINOIS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

UNITED STATES STEEL

When inquiring check FP 1751 on handy form, pgs. 2-3



This case came to a head in a New York cosmetic plant. Keeping dry powder moving through the bins and drums without costly jam-ups was a real problem.

We're happy to say a CLEVELAND vibrator on each bin and drum was the ideal solution. In no time at all production delays became a thing of the past.

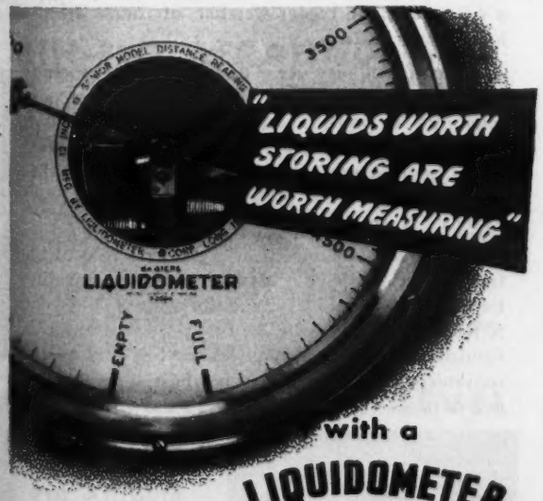
Tell us your materials handling problem, or ask for our detailed literature.

Bin Stuck Lately? AIR and ELECTRIC

THE CLEVELAND VIBRATOR CO.

2818 Clinton Avenue • Cleveland 13, Ohio

When inquiring check FP 1752 on handy form, pgs. 2-3



with a LIQUIDOMETER Tank Gauge

- FOR GAUGING LIQUIDS OF ALL KINDS
- 100% AUTOMATIC
- APPROVED BY UNDERWRITERS' LABORATORIES

WRITE FOR COMPLETE DETAILS

THE LIQUIDOMETER CORP.
39-25 SKILLMAN AVE., LONG ISLAND CITY, N.Y.

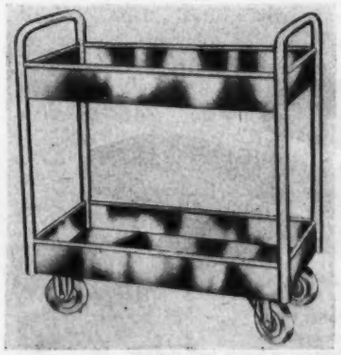
When inquiring check FP 1753 on handy form, pgs. 2-3

Moves variety of loads quickly and quietly

Uses: For picking orders, maintenance work and handling miscellaneous loads.

Features: Heavy-duty construction, streamlined design with no exposed bolts, nuts, or rivets.

Description: Load capacity is up to 600 lb. The two shelves are each 4" deep and top shelf may be inverted for flat surface use. Rubber-tired wheels, 5" diameter, are stationary in front, swivel in rear. Cart measurements are: length, 36"; width, 24"; height, 36". Finish, olive green baked enamel.



Easily handles 600 lb loads

(Stock cart is built by Precision Equipment Co., Dept. FP, 3714 N. Milwaukee Ave., Chicago 41, Ill. . . . or for more information check FP 1754, pages 2 and 3.)

Adjustable dock ramp for loads to 10 tons

A 20,000 lb capacity hydraulic adjustable dock ramp is described in single sheet bulletin. Standard width is 6', with lengths ranging from 5' to 12'. Raising and lowering is controlled by push buttons.

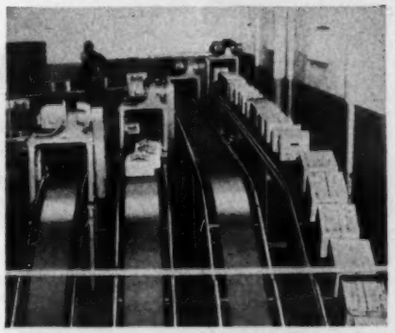
Bulletin on Adjust-A-Dock No. 4 N. F. is issued by Rowe Methods, Inc., Dept. FP, 2534 Detroit Ave., Cleveland 13, Ohio. When inquiring specify FP 1755, pages 2 and 3.

Want to move things up

For lifting or lowering — floor-to-floor — the INCLINEBELT

Continuous package conveying — a complete belt conveyor system or the Inclinebelt—complete, compact easy-to-install, electric-motor powered unit. High, continuous-line load capacity for any floor elevation. Available in belt widths of 8-12-14-18-24-30 and 36 inches.

down



For inclined or horizontal conveying — the UTILITY BELT-VEYOR

Conveys from floor-to-floor. Moves "packages" down, up or horizontally. Electric motor powered. Installs over existing stairways, or can be used as a portable Levelbelt conveyor. Four standard belt widths: 10-14-20 and 24 inch.

or horizontally?

For straight line or inclined conveying — assemble your own system or portable conveyor using HANDI-DRIVE pre-built units

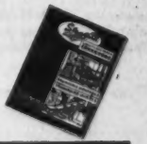
These stock, pre-built conveyor-units make it easy to assemble what you want in a conveyor. Converts existing gravity conveyor to power conveyor — quickly and at low cost. Can be installed as single portable unit or complete system.

Standard builds conveyors to speed any ONE or all THREE

Call your Standard representative listed in your classified phone book or send for illustrated Standard General Catalog describing all three units — address Dept. FP-15

STANDARD CONVEYOR COMPANY

General Offices: North St. Paul 9, Minnesota • Sales and Service in Principal Cities



GRAVITY & POWER Conveyors

• ROLLER • SLAT • WHEEL
SECTIONAL • BELT • CHAIN • PUSH-BAR

PORTABLE CONVEYOR UNITS:
HANDIBELT • INCLINEBELT • EXTENDOVEYOR • UTILITY BELT-VEYOR
HANDIPILER • LEVEL BELT • LITEWATE • HANDIDRIVE
PNEUMATIC TUBE SYSTEMS

When inquiring check FP 1756 on handy form, pgs. 2-3

Make sure your maintenance man sees this!

Clark's

POWRWORKER "26"*

The most "Serviceable" truck ever built!

POWRWORKER "26" Pallet Truck
4000 and 6000 lbs. capacity
Also available as platform or tilting fork stacker

Ask him to compare these ACCESSIBILITY features!

HYDRAULIC SYSTEM EXPOSED IN 2 MINUTES . . .

Remove 4 bolts and slip off the one-piece cover; the complete hydraulic sub-assembly is exposed. Hydraulic motor, pump, oil reservoir, valve assembly and self-aligning cylinders are immediately accessible and ample space is provided for quick inspection or removal.

POWER HEAD READY-TO-WORK-ON IN 2 MINUTES . . .

Split cover allows complete accessibility to the drive motor, brakes, resistor and control panel by merely removing 7 screws. Revolving head permits servicing any side of the power head without further dis-assembly. For major overhaul, the whole unit can be removed in 17 minutes.

CHANGE DRIVE TIRE IN 12 MINUTES . . .

Standard Press-on type demountable tire is furnished as original equipment. Raise the truck 12 inches and loosen spanner nut which releases the axle shaft and the wheel drops out. Split wheel rim with spreader inserts allow immediate tire dis-assembly and re-assembly.

**The POWRWORKER "26" is only 26 inches longer than the load . . . the shortest standard truck on the market!*

☐ Please send POWRWORKER literature.
☐ Have representative call.

Name _____
Firm Name _____
Street _____
City _____ Zone ____ State _____

POWRWORKER SECTION
Industrial Truck Division
CLARK EQUIPMENT COMPANY
Battle Creek 15, Michigan

CLARK EQUIPMENT

When inquiring check FP 1757 on handy form, pgs. 2-3

Tests of dry ice reefers show costs comparative to mechanical refrigeration

Trips handling juice, meats, fish varied from 18 to 93 hours

Temperature performance requirements of perishables, including frozen foods, are met by several types of dry ice units. Employment of dry ice under gas and temperature control with unit properly installed and operated, compares favorably in cost to mechanical refrigeration at 5 to 7c/mile.

Tests were made on semi-trailers in which temperature of commodity was maintained to satisfaction of shipper and consignee. Costs were computed on the basis of 4c/lb for dry ice consumed.

The dry ice reefer costs are significant because they are based on a wide variety of commodities, insulation thickness, and outdoor conditions. Most tests occurred in hot weather.

Here are figures on certain test shipments. Fresh meat: Ill. to Mass. — average loading temperature 37°F; commodity unloading temperature 40°F; outdoor temperature 54-80°F; insulation thickness 3″; cost per mile 2 4/10c.

Juice: Fla. to N. J. — average loading temperature 0°F; commodity unloading +3°F; outdoor temperature 70-95°F; insulation thickness 6″; cost per mile 4 4/10c. Runs in cooler weather, of course, have a lower per mile cost.

Advantages of dry ice "under control" include low initial cost of unit, low maintenance, and reliability as well as quick turn-around without wait for servicing. Dry ice costs are often visualized in the form of monthly bills. The fact that this cost represents 99% of total refrigeration expense is frequently overlooked.

(A complete tabulation of nine test trips is available from R. F. Allyne, Transportation Refrigeration Engineer, the Liquid Carbonic Corp., Dept. FP, 3100 S. Kedzie Ave., Chicago 23, Ill. . . . or for more information reader may simply check FP 1758 on the convenient Reader Service slip which is located between pages two and three.)

Shows how to save warehouse space

Rotary calculator shows aisle width required for right-angle stacking with all types of fork trucks, area devoted to aisles in sq ft and savings made possible in cu ft of storage space.

(Space wheel is issued by Lewis-Shepard Products, Inc., Dept. FPR-49, Watertown, Mass. When inquiring specify FP 1759 on handy form, pages 2 and 3.)

Pipe it...
— AND AVOID TODAY'S HIGH COST OF MATERIAL HANDLING

Screw-Lift is a tubular conveyor that will elevate any free-flowing bulk material from truck or track hopper to processing machines or to storage. It will also reclaim from storage and deliver to production equipment, thence, to baggers or packaging machines.

Screw-Lift is not just a conventional screw conveyor mounted vertically. It is designed and engineered to function as a machine with exclusive features that prevent clogging at the junction of the horizontal tube with the vertical, and has patented stabilizer bearing which keep the sections in alignment. This allows free movement of material with a minimum of obstruction to the flow.
The unit is compact, totally enclosed, dust-tight, sanitary, moisture-proof and requires little space to install. There are no complicated supports or cumbersome drives required. Accessibility is also a feature.
Built in 6 types and 4 sizes. Elevates to any practical height and feeder can be any length required. Capacities up to 3000 cu. ft. per hour.

Screw-Lift
A COMPLETE CO-ORDINATED CONVEYING AND RECLAIMING SYSTEM IN A TUBE

Before you purchase any equipment for conveying your bulk materials be sure to learn about the exclusiveness of "Hammond" Screw-Lift design. Also, send samples of your material to put through our full scale laboratory and see exactly how it will handle. Write for Forms M-500-2 and M-600-2.

Screw Conveyor Corporation
701 HOFFMAN STREET • HAMMOND, INDIANA
WINONA, MISSISSIPPI — SANTA CLARA, CALIFORNIA

When inquiring check FP 1760 on handy form, pgs. 2-3

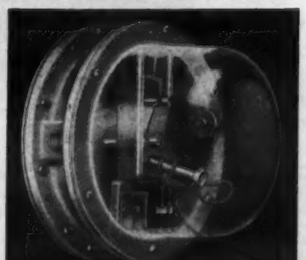
BIN-FLO AERATING UNIT

Provides Steady Flow of Dry, Finely Ground Materials which tend to bridge in storage. Uses only small amount low-pressure air.

BIN-DICATOR BIN LEVEL INDICATOR

For All Bulk Materials

signals change in level; automatically starts and stops filling and emptying equipment.



THE BIN-DICATOR CO.
13946-C Kercheval • Detroit 15, Mich.

NEW DETAIL DATA BOOK FREE

When inquiring check FP 1761 on handy form, pgs. 2-3

Conveys loads to dock, spots them in various points in wide area

Spotting of shipments on loading dock is simplified by a permanently floor-mounted conveyor embodying a flexible assembly of split rollers, built as individual frames, moving in a stationary slider bed. Attached to this conveyor is a movable tail section of gravity wheels or rollers.

Receiving end of the conveyor section is attached to discharge end of shipping room conveyor with tail section extending into loading dock. Tail section can be moved through an 80° arc (40° right and left from through position). Cases or boxes can be removed from tail unit at any point along its length. No conventional switching equipment is required.

Tail unit of conveyor moves in 80° arc

Tail sections are available in lengths up to 25′ (5′ standard). Conveyor sections are built in 11½, 15 and 18″ widths. Couplings for attaching conveyor to various standard roller or wheel gravity conveyors are available.

(Conveyor switching assemblies consisting of "Flex-A-Joint" and "Flex-A-Tail" units are a development of Metzgar Conveyor Co., Dept. FP, 461 Douglas St., NW, Grand Rapids 4, Mich. . . . or for more information check FP 1762 on the convenient Reader Service slip which is located between pages 2 and 3.)

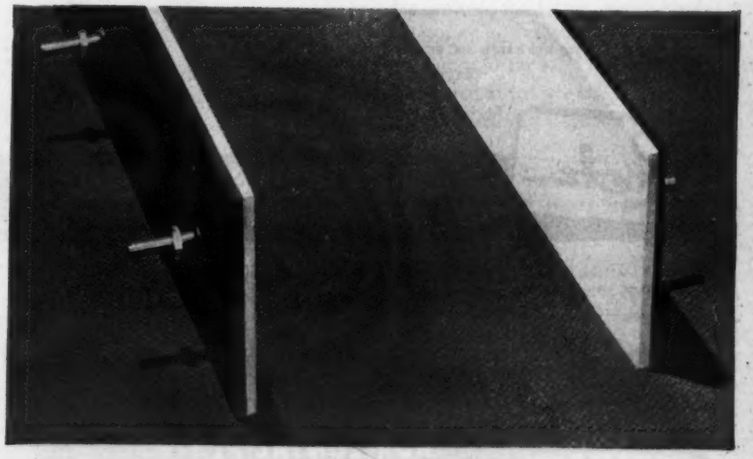
TEFLON aids food handling

conveyor guide-rails protect products and packages

● With TEFLON-faced guide rails on conveyors and packaging machines, handling spoilage is minimized, sanitation is simplified, packages do not become streaked or smeared.

Why? Because nothing sticks to TEFLON, the slipperiest material known. Chemically inert, having zero moisture absorption, tasteless, odorless — it prevents food contamination and is the easiest material to keep clean.

TEFLON-faced steel guide rails are fabricated by the United States Gasket Company in any length



up to 12 feet and in widths from ½ in. to 2½ in. One-eighth inch thick duPont TEFLON is bonded on ⅛ in. steel bar leaving the surface unmarred by mechanical fasteners. Shot-welded studs on the metal side are provided at designated points for attaching to equipment. Special shape guide rails are also available to specifications.

Ask your Industrial Distributor or write for Bulletin No. GR-301.

UNITED STATES GASKET COMPANY
CAMDEN 1, NEW JERSEY

USG | FABRICATORS OF FLUOROCARBONS & OTHER PLASTICS
Representatives in principal cities throughout the world

When inquiring check FP 1763 on handy form, pgs. 2-3

PLANT OPERATORS WITH HOLES IN THEIR HEADS

usually ignore our

FREE LABORATORY TESTING SERVICE

But *you* will quickly realize it may show you a valuable new method of pulping, disintegrating, crushing or comminuting your food products or by-products.

For help in solving your problems, send us samples. In our Laboratory we use Rietz Disintegrators and Rietz Prebreakers plus our experience to reach an answer. You get a full report, complete with test samples. And we'll pick up the entire check.

If Rietz equipment does a better job of meeting your specifications, we'll hope to sell you some or install it in your plant on our rental-trial plan. If it does not do a better job, we've all learned something and you're out nothing except some samples.

B-U-T...you won't know and we won't know, unless you let us try.

RIETZ MFG. CO. SALES AND SERVICE
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EAST: 1969 Bartle Avenue • Scotch Plains, New Jersey
SOUTH: Forsyth Building • Atlanta, Georgia

Rietz MANUFACTURING CO.
Santa Rosa, California

When inquiring check FP 1764 on handy form, pgs. 2-3

SPARKLER FILTERS

SPARKLER horizontal plate FILTERS

HORIZONTAL PLATE

100% Sanitary For Food Products

Made in all stainless steel—valves and piping—with all surfaces completely cleanable to conform with sanitary requirements in the food field.

Are the plates in the filter you are now using as accessible for complete cleaning inside and out as the Sparkler horizontal plate shown here?

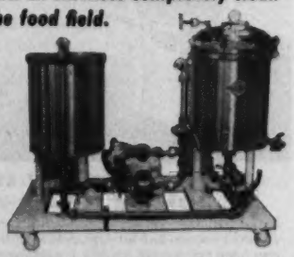
With most other types of filter plates the inner surfaces are inaccessible and cannot be cleaned; contaminating particles are locked in and the first run of a new batch frequently must be discarded or rerun through the filter.

With Sparkler sanitary plates, a pure product is obtained right from the start and continues pure with fine sharp filtration up to the end of the filtering cycle.

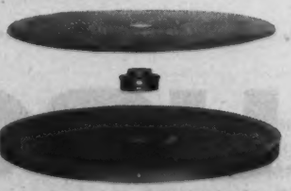
The patented Sparkler scavenger plate acts as an auxiliary filter with independent control valve filtering each batch down to almost the "last drop," leaving practically no unfiltered holdover in the bottom of the tank.

Available in capacities up to 10,000 G.P.H.

Write Mr. Eric Anderson for personal service



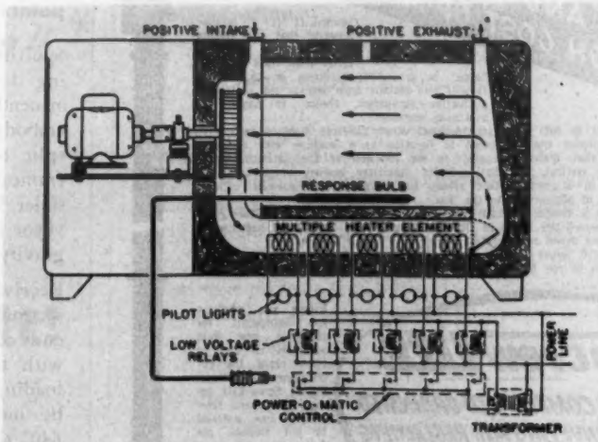
All stainless steel horizontal plate filter with stainless steel piping, valves, and slurry tank.



Sparkler plates can be completely disassembled for sanitary cleaning.

SPARKLER MANUFACTURING CO., Mundelein, Ill.
Sparkler International Ltd. Plants at Galt, Ontario, Canada and Amsterdam, Holland
Service representatives in principal cities

When inquiring check FP 1765 on handy form, pgs. 2-3



Wiring diagram and sectional view of oven

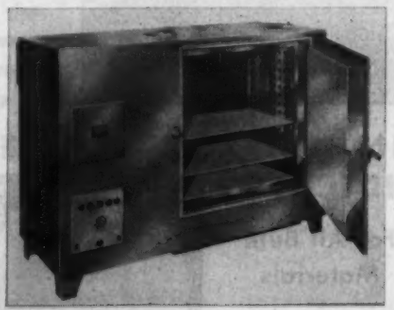
Lab oven attains modulating control by using five heating elements instead of one, and thus

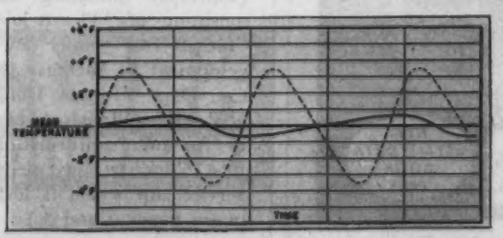
eliminates temperature cycling

Method on controlling oven temperature within ±0.5°C, by varying wattage input to correspond with operating temperature and work load, has been designed. Total wattage input necessary to bring oven to its maximum temperature is divided and fed into five individual heater elements. Hydraulic thermostat automatically energizes and de-energizes each element through 6 v relays. All elements are energized when oven is first switched "on". As selected temperature is approached, thermostat begins to de-energize one heater unit at a time.

After heat losses through insulated walls and work load heat absorption are stabilized, selected temperature in oven is kept constant by thermostat automatically switching off and on the minimum number of heater elements for constant temp.

Usually, only one element is needed for this function. Each time oven door is opened, all heater elements are energized, permitting fast temperature recovery. Ovens, so equipped, are able to hold





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Temperature control characteristics of mechanical convection oven with modulating control as contrasted with conventional control (dotted line)

temperature within 0.5°C, the approximate sensitivity of thermostat.

Automatic, progressive takeover from element to element insures maintenance of set temperature. In case of element or contact failures, next element takes over. Control system is independent of line voltage fluctuations since it operates on temperature sensing alone.

Industrial batch and mechanical convection ovens with automatic wattage control systems are available in sizes from 14" inside width, depth, and height to unit 48 x 24 x 36". Air movement is controlled to any desired value up to 250 fpm with 50 air changes/min. Ovens operate from 230 v, 60 cy ac, except smallest model which can be supplied for 115 v ac, if specified.

(Power-O-Matic controls and Con-Wate Ovens are products of Blue M Electric Co., Dept. FP, 306 W. 69th St., Chicago 21, Ill. . . . or for more information check FP 1766 on handy form, pages 2 and 3.)

Uses ion exchange filter to remove minerals from lab water

Filter attaches to polystyrene container to allow unpure water to drip through unit

Squeeze on bottle speeds flow through filter

Uses: Removes minerals and salts from tap water to provide chemically pure water.

Features: Filter fits on polystyrene bottle to allow water to drip through unit unattended, permitting technician to perform other duties while water is being purified.

Description: Ion exchange resin filter shows "end point" by color change from deep blue to brown. Plastic bottle has air check valve which permits easy flow. Gentle squeeze on bottle speeds flow through filter. Unit includes metal ring stand, polystyrene quart-sized container with graduations, and filter.

(Water demineralizer is a product of Crystal Research Laboratories, Inc., Dept. FP, 29 Allyn St., Hartford 3, Conn. . . . or for more information check FP 1767 on handy form, pages 2 and 3.)

ENDS DOWN-TIME LOSSES

Bausch & Lomb

"Abbe-56"

America's most widely used all-purpose refractometer

Always *dependable* for faster, easier readings—accurate to ± .0001—of any liquid or solid in the 1.30 to 1.71 index range. Job-proved record of longer life, less interrupted service than any other Abbe-type instrument.

Here's why! Streamlined housing protects scale and internal parts from dust, dirt, fumes, liquids. Special prism cement —cannot be harmed by food acids or organic compounds. No time lost for prism surface reconditioning—spare prism set (optional), readily interchangeable *by user*.

Always on the job! That's why it's far and away America's Number One choice.

Free demonstration! Try it yourself, in your own laboratory. See how much time and effort you save in getting dependably accurate readings . . . year in, year out. Absolutely no obligation.

WRITE for Catalog D-202 and a demonstration. Bausch & Lomb Optical Co., 60637 St. Paul St., Rochester 2, N. Y.

BAUSCH & LOMB

SINCE 1853

"Abbe-56" REFRACTOMETER

When inquiring check FP 1768 on handy form, pgs. 2-3.

PLANT OPERATORS WITH HOLES IN THEIR HEADS

usually ignore our

FREE LABORATORY TESTING SERVICE

But *you* will quickly realize it may show you a valuable new method of pulping, disintegrating, crushing or comminuting your food products or by-products.

For help in solving your problems, send us samples. In our Laboratory we use Rietz Disintegrators and Rietz Prebreakers plus our experience to reach an answer. You get a full report, complete with test samples. And we'll pick up the entire check.

If Rietz equipment does a better job of meeting your specifications, we'll hope to sell you some or install it in your plant on our rental-trial plan. If it does not do a better job, we've all learned something and you're out nothing except some samples.

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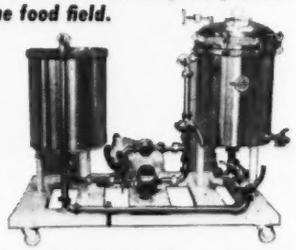

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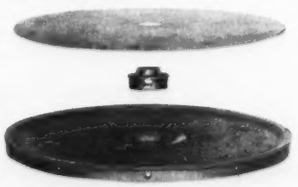

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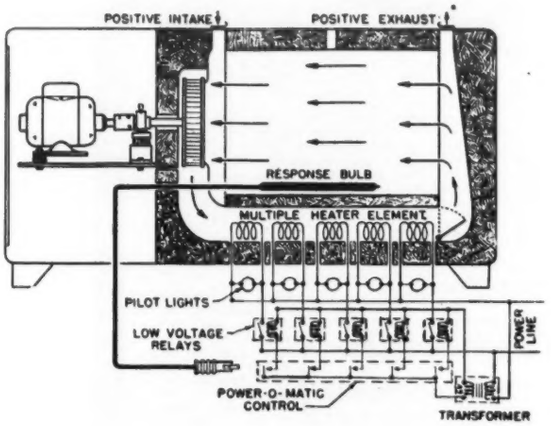

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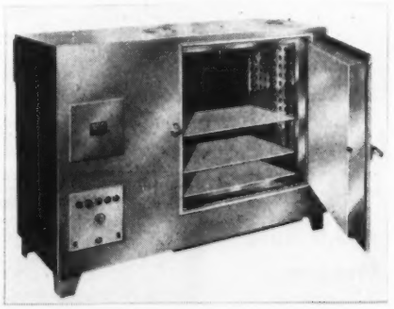

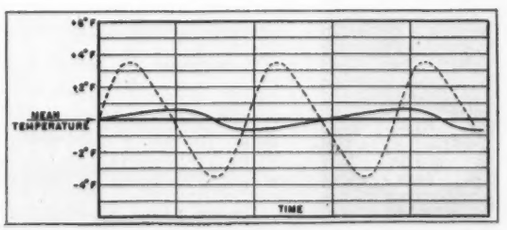

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"Abbe-56"

America's most widely used all-purpose refractometer

Always *dependable* for faster, easier readings—accurate to ± .0001—of any liquid or solid in the 1.30 to 1.71 index range. Job-proved record of longer life, less interrupted service than any other Abbe-type instrument.

Here's why! Streamlined housing protects scale and internal parts from dust, dirt, fumes, liquids. Special prism cement —cannot be harmed by food acids or organic compounds. No time lost for prism surface reconditioning—spare prism set (optional), readily interchangeable *by user*.

Always on the job! That's why it's far and away America's Number One choice.

Free demonstration! Try it yourself, in your own laboratory. See how much time and effort you save in getting dependably accurate readings . . . year in, year out. Absolutely no obligation.

WRITE for Catalog D-202 and a demonstration. Bausch & Lomb Optical Co., 60637 St. Paul St., Rochester 2, N. Y.

BAUSCH & LOMB SINCE 1853

"Abbe-56" REFRACTOMETER

When inquiring check FP 1768 on handy form, pgs. 2-3

THANKS TO AN INGREDIENT THAT ISN'T THERE AT ALL!

Strange but true...something you can't find in the final product is helping to maintain the purity of many food products and providing an extra safeguard to the meal tables of the nation.

That "something" is Dicalite. For Dicalite diatomaceous filteraids give filtration so "sharp" as to remove unwanted solids even down in the submicron size range. Sugar refiners count on Dicalite filtration to remove thermophilic bacteria and meet the high purity standards of canners. Processors refining and hydrogenating vegetable oils use Dicalite to remove decolorizing agents and every trace of the necessary nickel catalyst. Producers of beer, wine, vinegar, salad dressings, fruit juices, pectin and preserves are among the other food processors who have found Dicalite filteraids of definite aid in maintaining the quality of their products and in speeding up production.

If you have not fully investigated the advantages of Dicalite in your processing, write us for a copy of our Bulletin B-12, which gives full details on Dicalite filteraids together with practical application and operation data.

Dependable GLC GREAT LAKES Dicalite® DIATOMACEOUS MATERIALS

DICALITE DIVISION, GREAT LAKES CARBON CORPORATION, 612 SO. FLOWER STREET, LOS ANGELES 17, CALIFORNIA

When inquiring check FP 1769 on handy form, pgs. 2-3

quality control

Stone grinding mill for lab features simple clean cut

Automatic feed prevents overloading, mill adjustable to nine degrees of fineness

Uses: For grinding tough, fibrous organic materials such as cereals, spices, coffee, sheet gelatin. Laboratory mill has capacities of 8 to 10 lb/hr based on fine grind of hard wheat. Larger commercial mills have capacities to 60 lb/hr.

Features: Mill is adjustable to nine degrees of fineness, from coarse particle size down to the finest flour. Ventilation of grinding chamber keeps temperature at a minimum, permitting reduction of materials whose quality or grinding properties are affected by heat. The material is ground to uniform mesh, eliminating the operation of sifting or bolting.

Description: Electric stone grinding mill has a circular ring which remains stationary while the

▲ Lab mill designed to grind alternative runs of toxic and non-toxic materials where complete clean out is essential. Also available in commercial sizes

◀ Grinding action is attained by centrifugal force bouncing material against the abrasive surface of circular stone

grain is spun around inside unit. Paddle or impeller revolves rapidly, causing material being fed into the chamber to bounce against the abrasive surface of the circular stone ring. As material is reduced to specifications, it passes through to the receptacle below. All contact surfaces are made of stainless steel.

The grain in the grinding chamber imposes a load on the motor, thus slightly decreasing the speed. This slight decrease in speed causes the feed disc to move forward cutting off the flow of the grain to the grinding chamber. The automatic governor allows just the proper amount of grain to enter the grinding chamber and prevents overloading and clogging of the mill. When the motor comes up to operating speed, the feed disc moves back allowing grain to again enter the grinding chamber.

By removing two screws, the face plate can be taken off, for quick, efficient cleaning of the interior. Stone used is specially molded, silicone carbide, second in hardness to diamond, and does not require attention during its life. After the operator has made the setting, no further supervision is necessary. All motors are series universal 115 volt ac or dc and motor bearings are sealed type which require no additional lubrication.

(Laboratory stone grinding mill is a development of Lee Engineering Co., Dept. FP, 2023 W. Wisconsin Ave., Milwaukee 3, Wis. . . or for more information check FP 1770 on handy form, pages 2 and 3.)

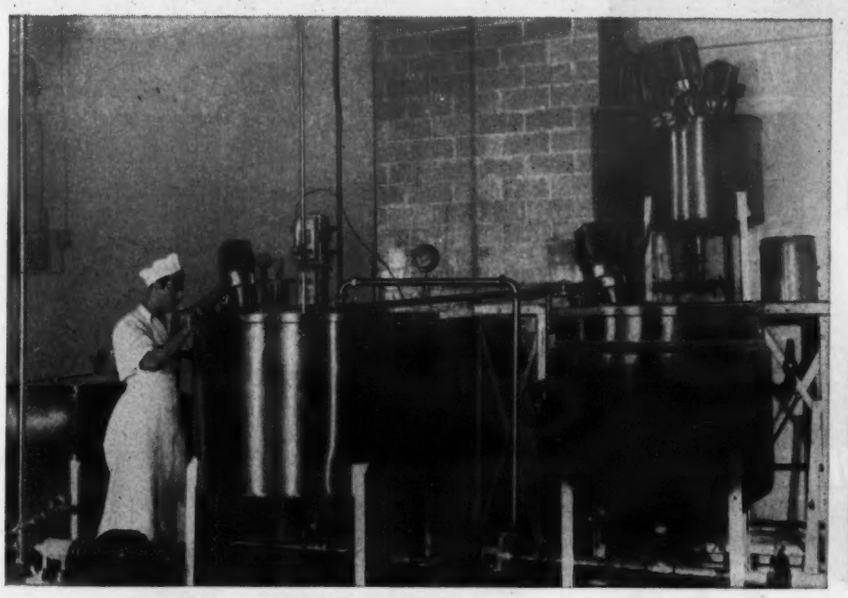
Effective bacteriological medium made from peas, peptone

Gives improved data on organisms in can leakage, underprocessing thermophile studies

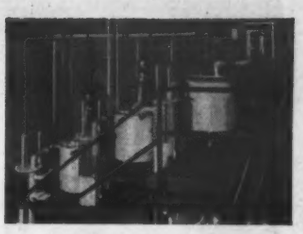
Simple bacteriological medium has been evaluated for usefulness in spoilage tests with canned foods. Data shows that medium, PE-2, gave highest percentage of positive tubes for growth of organisms associated with spoilage due to leakage, underprocessing, and thermophilic organisms. Comparisons were made with dextrose broth, tomato liver agar, and TA-PA medium.

PE-2 medium is inexpensive, easy to prepare. Twelve dried, small Alaska seed peas are added to approximately 20 ml of 2% peptone solution, sterilized in screw cap tubes. The pH of medium is around 6.5, and no adjustment is necessary. It is also successful for preparation of spore suspensions of putrefactive anaerobes, thermophilic anaerobes, and butyric anaerobes.

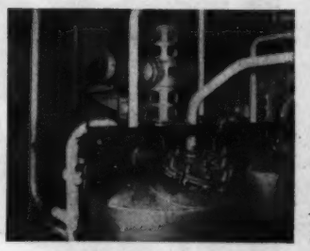
(Reprint of published report on PE-2 bacteriological medium is available from Research Library, Continental Can Co., Dept. FP, 135 S. LaSalle St., Chicago, Ill. When inquiring specify FP 1771 on handy form, pages 2 and 3.)



ANY TANK OR KETTLE becomes an efficient mixing unit when you add a LIGHTNIN Portable Mixer. No baffling is necessary. The mixer can be removed or switched to another tank at any time. More than 30 models. Sizes ⅛ to 3 HP.



FOR PRESSURE or vacuum mixing, propeller-type LIGHTNIN is easily bolted to tank nozzle. Has integral stuffing box, ready to operate. Sizes ¼ to 3 HP.



FOR LARGER BATCHES turbine and paddle type LIGHTNIN Mixers provide exact balance of flow and turbulence for maximum results. Hundreds of power-speed combinations. Sizes 1 to 500 HP.

5 ways to CUT fluid mixing COSTS

1. You can mix big batches—as big as you want—with a standard LIGHTNIN Mixer. For instance, you can blend as much as 3,000 gallons of syrup, filling, or thin sauce—as much as 500 gallons of heavy batter—with a portable propeller-type LIGHTNIN.

2. You can switch a LIGHTNIN Portable Mixer from tank to tank, as your mixing requirements change. You can get shafts and propellers to fit different batch sizes, saving much of the cost of a complete new mixer.

3. You can handle peak loads, by adding a simple tank or kettle to the line. Clamp a LIGHTNIN Portable in place, and you're ready to start mixing.

4. You can save costly man-hours by refusing to let personnel mix or stir with hand paddles. Even on simple mixing jobs, it's much faster, cheaper (and results are always uniform) when you let a LIGHTNIN do the work.

5. You can be sure about results, because every LIGHTNIN Mixer is *fully guaranteed* to do the mixing job *right*. Many LIGHTNINS have been running smoothly for 20 years and more.

Lightnin® Mixers

GET THESE HELPFUL FACTS ON MIXING

LIGHTNIN Catalogs contain practical data on impeller selection; sizing; best type of vessel; installation and operating hints; full description of LIGHTNIN Mixers. Yours without obligation. Check and mail coupon today.

MIXCO
fluid mixing specialists

- ☐ DH-50 Laboratory Mixers
- ☐ DH-51 Explosionproof Laboratory Mixers
- ☐ B-102 Top Entering Mixers (turbine and paddle types)
- ☐ B-103 Top Entering Mixers (propeller type)
- ☐ B-104 Side Entering Mixers
- ☐ B-105 Condensed Catalog (complete line)
- ☐ B-107 Mixing Data Sheet
- ☐ B-108 Portable Mixers (electric and air driven)

MIXING EQUIPMENT Co., Inc.
132-a Mt. Read Blvd., Rochester 11, N. Y.
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Please send me, without obligation, catalogs checked at left.

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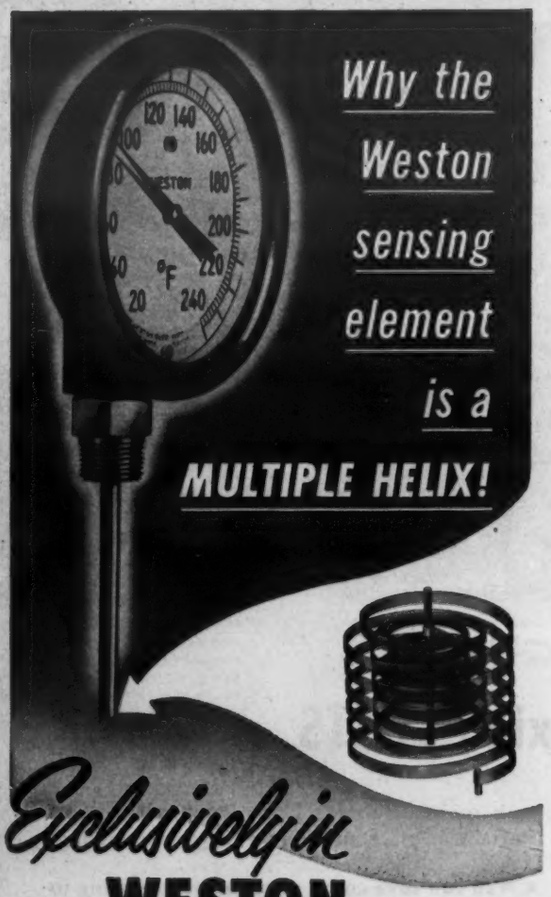


Exclusively in

WESTON
all-metal THERMOMETERS

Although WESTON provides sensing elements of various forms for special applications, the element in all standard WESTON Industrial Thermometers is a *multiple helix* as illustrated above. Why the more costly *multiple*, instead of the single, helix? *Just one reason.* WESTON's twenty years' experience producing bi-metal thermometers for industry has furnished convincing proof that the shorter, non-sagging *multiple* helix provides better accuracy, over longer periods. And while it provides other advantages, the one thing most thermometer buyers demand is long-term dependability. You get it, in extra measure, in WESTON Thermometers with *multiple* helix. WESTON Electrical Instrument Corp., 614 Frelinghuysen Avenue, Newark 5, N. J.

WESTON
Thermometers

When inquiring check FP 1773 on handy form, pgs. 2-3

Vacuum pan refractometer installed on Buflovak pan in Bedford Products, Inc., Dunkirk, New York

Continuously reading in-line refractometer for difficult measurements

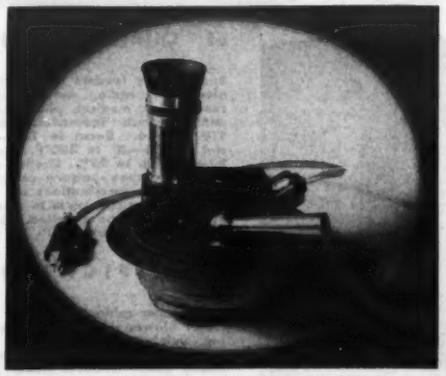
Accurate soluble solids reading of dark-colored semi-solid foods; accuracy to ¼ of 1%

Turbid and dark-colored concentrates, jellies, jams, pastes, purees, or milk products are difficult to measure by refractometry. Developed in Israel for unskilled production workers in the citrus industry, a new in-line instrument for direct reading of total soluble solids is mounted directly in wall of vacuum pan, process vessel, or connecting pipe. Compared with the familiar hand and laboratory refractometers, the optical system of the instrument provides a marked sharpening of the contrast between the light and dark areas seen in the eyepiece. Position of boundary line is read directly on Brix scale. Range is from 12% to 72% or 0-25% total soluble solids.

In the conventional systems directed light rays enter the refractometer after passing *through* the product under observation. If the product is colored it will absorb some of these rays, weakening the light rays causing haze and a poor shadow line. In the new system on the other hand, the light does not pass through the product but travels *toward it* from the refractometer and is scattered right back into the refractometer as soon as it touches the product. In other words scattered light is actually employed to build up the bright part of the field of view, and the more there is of it the better.

Readings of a vessel's contents may be made at any instant they are wanted. No sampling is required, and there is no need to correct for differences between refractometer and vessel temperature. No inaccuracies can be introduced from evaporation while a sample is being withdrawn.

First installation of the vacuum pan refractometer was at Bedford Products, Inc., in Dunkirk, N. Y. The dark color of the grape concentrates, jellies, and jams processed by this plant presented a difficult problem for accurate control by refractometry. The exceptional light contrast seen in the eyepiece of the instrument has solved this problem during a full season of operation, allows readings to ¼%, accord-



Refractometer has range of 12-72% or 0-25% total solids. Maximum recommended temperature: 150°F (std. model), 230°F (special model)

ing to Robert Webb, who is Bedford's director of quality control.

The vacuum and pressure-tight instrument fits onto flange welded to opening in process vessel or pipeline. To make a reading, operator flicks lever which brings fresh liquid to face of refractometer prism inside vessel. This prevents stagnant layers from affecting the measurement. Operator merely reads the position of line on scale.

(*Continued on next page*)

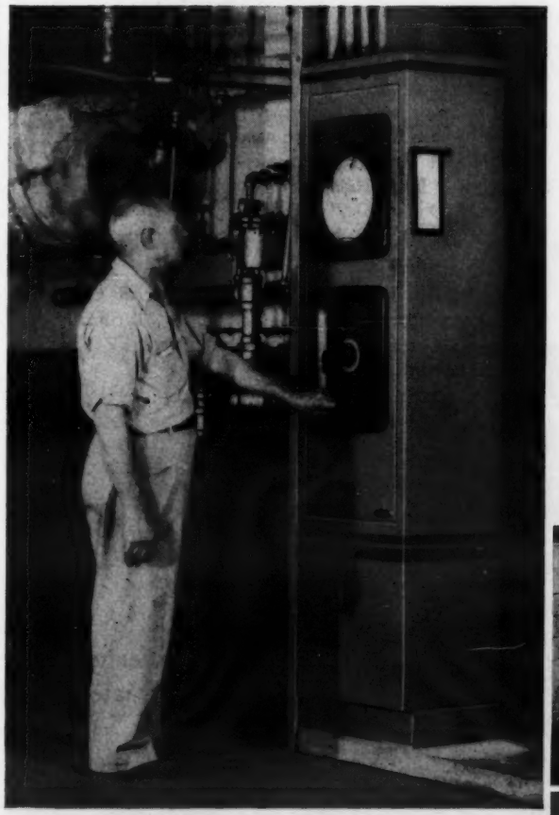
Actual size scale as it appears in the vacuum pan refractometer

Maker* of

Page & Shaw simplifies checking of

24 critical plant temperatures

. . . with compact, centralized Foxboro system



Keeping a close watch on temperatures of 24 widespread storage and production rooms doesn't require any "legwork" at Daggett Chocolate Co. A Foxboro Segmental Chart Recorder "makes the rounds" automatically . . . logs each temperature every half hour.

The Recorder, installed in the compressor room, gives the refrigeration engineer a complete 24 hr. temperature "picture" on a single, circular chart. In addition, a selector switch unit permits him to spot check any room manually in seconds. Besides saving countless hours of inspection tours, the centralized system *continuously* insures protection of candy freshness and finish from bloom or sweating.

Foxboro Centralized Recording Systems are simplifying temperature and humidity measurements throughout the food industry . . . providing more compact, highly legible records for quality control. Write for complete information on this modern method.

*Daggett Chocolate Co.; also maker of Lowney's, Apollo, Gobelin, and other famous-name chocolates.

Compact, cabinet-mounted Foxboro Segmental Chart Recorder and Selector Switch Unit centralize room temperature measurements in compressor room at Daggett Chocolate Co., Cambridge, Mass. Typical of critical areas measured are packing room (top right) and storage room (lower right). Sensitive, wall-mounted Dynatherm bulbs detect room temperatures.

THE FOXBORO COMPANY, 921 NEPONSET AVENUE, FOXBORO, MASS., U. S. A.

FOXBORO
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Centralized Recording and Control Systems

FACTORIES IN THE UNITED STATES, CANADA, AND ENGLAND

When inquiring check FP 1774 on handy form, pgs. 2-3

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INSURES QUALITY OF PRODUCT WHEN YOU USE THE

NEW MOISTURE REGISTER G5

EXCLUSIVE R. F. POWER ABSORPTION CIRCUIT

PROVED IN THE FIELD ON

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POWDERED CHEMICALS
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NAME _____ TITLE _____

COMPANY _____ ADDRESS _____

CITY _____ STATE _____

When inquiring check FP 1775 on handy form, pgs. 2-3

(Continued from preceding page)

Refractometer has calibration adjustment for direct Brix reading at any particular operating temperature. The adjustment is made with a screw driver from the outside. Once done, resetting is not required. Maximum recommended temperature for the standard model is 150°F, but instruments which will operate at temperatures up to 230°F are available on special order. For low Brix products such as tomato juice or apple sauce a special low range, expanded scale is available which reads from 0 to 25% soluble solids.

All metallic parts in contact with product are of 303 stainless. Instrument is sanitary since the product does not enter the actual optical system. Flashlight bulb located within the instrument is supplied by a small radio or bell transformer. Current drawn is ¼ amp at 6 volts. No tools are needed to change lamps. Lamp life is 2000 hr. Instrument weighs 4 lb and is held by 3 large thumbscrews against a flange of 3-9/16" ID and 6½" OD which is welded to the vacuum pan or pipe. No tools are needed for attachment or removal.

(Vacuum Pan Refractometer is a product of Goldberg Instruments, Ltd. (US), Dept. FP, Tariffville, Conn. . . . or for more information check FP 1776 on handy form, pages 2 and 3.)

Easy reading feature of dial thermometer

Case rotates to any desired position

Stainless steel case of mercury-actuated dial thermometer shown in photo can be rotated to any position for easy reading. Instrument has clear plastic face covering and gasket sealed to stainless back plate. Thermometer can be calibrated from the outside. Dial face is 3½" with large black numerals and degree marks on white background for easy reading at long range.

Direct drive bourdon coil actuates the instrument —no sector, pinion, or linkage. Stem with stainless steel bulb, is ½" in diameter and is available in 4, 6, 8, and 12" lengths. Fittings are separable sockets, union connections, and flanged union.

(Thermometer No. 35-S is a product of Palmer Thermometers, Inc., Dept. FP, 2505 Norwood Ave., Cincinnati 12, Ohio . . . or for more information check FP 1777, pages 2 and 3.)

"Anetz" LABORATORY

CABINET AUTOMATICALLY CONTROLS TEMPERATURE and HUMIDITY for TESTING

of QUALITY CONTROL

Specified by leaders in the electric, electronic, radio, auto, chemical, food, paint, medical, pharmaceutical and research industries. RANGE STD. LSC-16. Room to 180°—Special LSC-16—0° to 300°F. Relative humidity up to 96%. Cooling equipment and time pattern controls to meet J.A.N. specifications are available. Various size ports to take testing loads can be supplied. Specify size and location.

SPECIFICATIONS

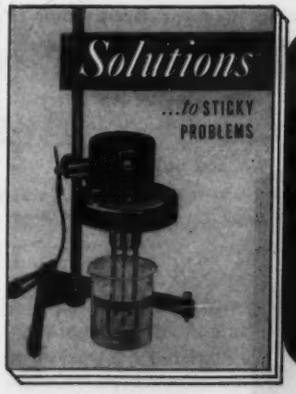
Entire inner cabinet, ducts, air conditioner blower wheels, nichrome heating unit, steam generator, water feeder, door liners, etc., are of heavy gauge stainless steel. Heavy molded rubber gasket seals doors. Model illustrated has outer cabinet of stainless with inspection window and wiper at additional cost.

WRITE FOR BULLETIN #170

ANETSBERGER BROTHERS, INC.

167 North Anetz Dr. Northbrook, Ill.

When inquiring check FP 1778 on handy form, pgs. 2-3



THE Quick Way TO ACCURATE VISCOSITY MEASUREMENT CONTROL STUDY

Yes, the new Brookfield booklet shown above contains the answers you've been looking for. Its 20 pages, packed full with the latest "how-to-do-it" information, could only have been prepared by the world's leading manufacturer of viscometers — *are the condensation of 15 years of specialized work on all sorts of rheological problems.* Send for your free copy today. No obligation of any kind, of course. Don't delay. Write Dept. Y.

WITH A Brookfield SYNCHRO-LECTRIC VISCOMETER

. . . you make determinations directly in centipoises — as quickly and easily as taking temperature readings. Availability of single and multi-speed models, and special accessories, has made Brookfield Viscometers the standard the world over for accurate work with both Newtonian and non-Newtonian materials. Effective range: 1 to 32,000,000 CPS.

BROOKFIELD ENGINEERING LABORATORIES, INC.

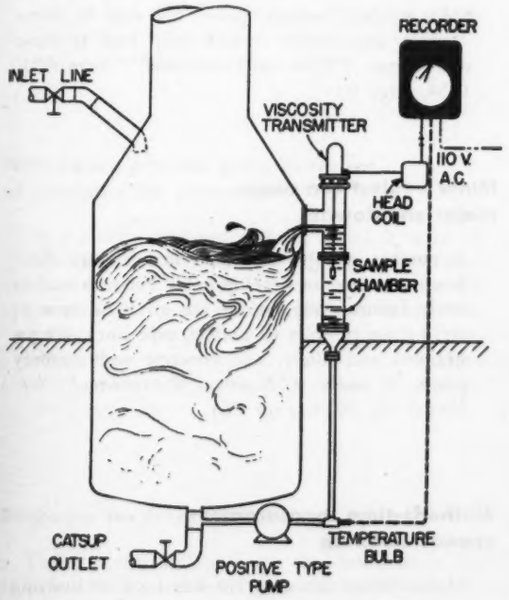
230 Cushing Street, Stoughton, Mass.

When inquiring check FP 1779 on handy form, pgs. 2-3

Catsup viscosity measured, recorded continuously

Catsup makers who have been resigned to the problem of variable viscosities while maintaining constant soluble solids content will find their troubles alleviated with new continuous viscosity recorder.

Because it is a major factor in grading and pricing, soluble solids content must be kept constant. This is generally done at the sacrifice of constant viscosity. The latter can be easily adjused but measurement formerly had to be done on a laboratory sample,



Typical catsup viscosity recorder installation. Material flows through 3" by 22" sampling chamber at 1 gpm for optimum performance

which was time-consuming and not nearly as effective as continuous on-the-spot measurement.

Sensing element of recorder is spindle, which rotates at constant speed. Torque on this spindle (proportional to viscosity) is measured electrically and calibrated in viscosity units on recorder. Temperature bulb placed in sample line provides coincident record of temperature with viscosity on instrument. In diagram, catsup enters sampling chamber from below, passes rotating spindle, returns to kettle through overflow.

(Viscosity recorders are manufactured by the Foxboro Company, Department FP, Foxboro, Massachusetts. . . . or for more information about manufacturer's product reader may simply check FP 1780 on convenient Reader Service slip which is located between pages two and three.)

"Your automatic syrup density control is really versatile!"

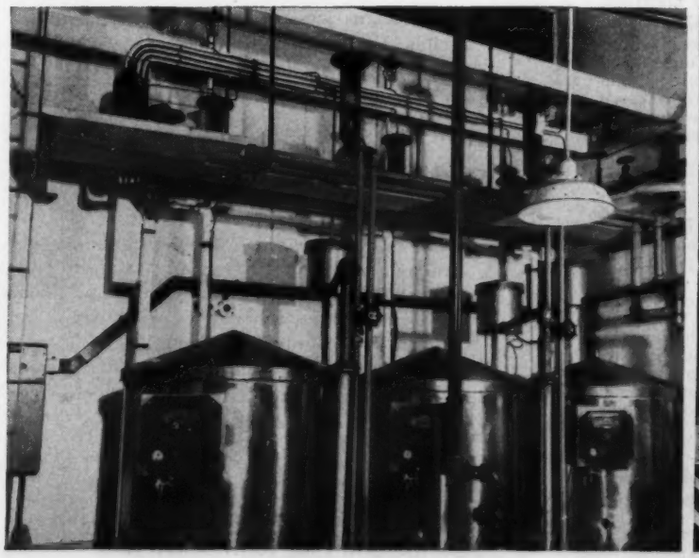
says Mr. Mark Gehlar, owner of Oregon Fruit Products Company. **Mr. Gehlar refers to the Taylor Syrup Density Control System installed in his cannery at Salem, Oregon where they specialize in canning fruits and berries in relatively small quantities. It's designed to maintain the brix of his canning syrup, control the level in the syrup tanks, and keep a constant level in the filler bowls.**

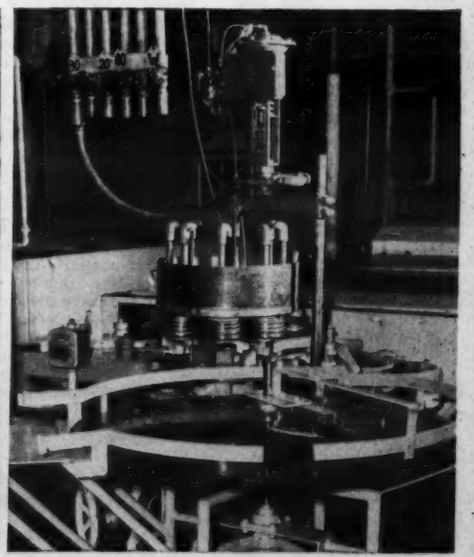
Two features of this system particularly impress Mr. Gehlar.

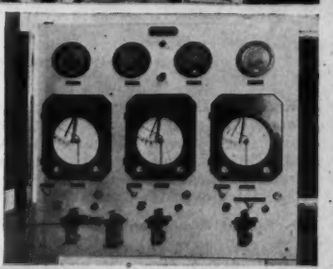
1. Its adaptability. **Being a specialty cannery they are constantly changing their syrup mix. This used to require a full-time operator in the mixing room. It's now done automatically—and the switching doesn't faze the 'versatile' Taylor controls.**

2. Its cleanliness. **It's a completely closed system from mixing tank to filler bowl—and there a liquid level controller insures minimum exposure of the syrup to the atmosphere by keeping the level down to an inch or two.**

The Oregon Fruit installation is another fine example of how Taylor controls help maintain quality and keep costs down. Ask your Taylor Field Engineer, or write for Catalog 500. Taylor Instrument Companies, Rochester, N. Y., or Toronto, Canada.







Taylor FULSCOPE* Indicating Temperature Controllers regulate steam to heating coils in mixing tanks (above left). Picture at right above shows Taylor VALVE-PRECISOR* actuated control valve used as a level control for the filler bowl. Panel (at right) shows Recording Density Controllers which maintain desired brix—also control level in syrup tanks.

*Reg. U.S. Pat. Off.

Taylor Instruments **MEAN ACCURACY FIRST**

When inquiring check FP 1781 on handy form, pgs. 2-3

Cool Vent-Back Glove: Palm coated with sure-gripping, long-wearing, rough textured natural rubber.

Costs 40% to 70% less to protect hands with palm-coated gloves

Coated palms outwear canvas or leather palms. Fabric backs give comfortable ventilation.

NEOX No. 93

Handling sharp-edged materials, wet or dry: Palm-coated with NEOX (specially reinforced neoprene) which is unequalled for resistance to cutting and puncturing and does not absorb grease or oil. Job-fitted for handling such materials as strip and sheet metal.

Grappler No. 342

Handling abrasive materials, wet or dry: This Grappler glove is palm-coated with DUROX, a leather-like plastic that outwears ordinary plastics 50% and retains its grip when wet. Band top and knitwrist styles are also available in regular plastic coating. All Edmont plastic coated gloves have wing thumbs and best fit of any coated gloves.

Grab-it No. 42-W

Handling sharp, abrasive or slippery materials, non-oily: Grab-it type, palm-coated with rough-textured natural rubber which has remarkable non-slip grip, as well as long-wearing qualities on rough work. Available in knitwrist style, also.

Free Test Offer to Employers: Send brief description of your operation, materials handled and temperature condition. We will recommend the glove (palm-coated or fully coated) that best fits your application, and forward samples free of cost, for testing on-the-job. Our laboratory also develops special gloves for special applications.

Edmont Manufacturing Co., 1212 Walnut Street, Coshocton, Ohio

World's largest maker of coated industrial gloves, available through all leading industrial suppliers.

Edmont job-fitted gloves

When inquiring check FP 1782 on handy form, pgs. 2-3

BRIEFS from contemporary publications

Here's a quick look at articles appearing in other technical and business magazines . . . selected by the Editors

New meter grades tomatoes and tomato juice for color

After four years of cooperative work, USDA and three experiment stations together with a commercial engineering firm, have evolved a meter which can be used to grade color of juice prepared from samples of incoming raw tomatoes.

In another application, the meter can be installed in a juice line to give a continuous indication of the color. The meter has been used successfully to measure color of a wide variety of other foods. The result is given as a single figure which is essentially the amount of light of a single selected wave length reflected from food sample. Three wave-lengths are available. 3 pages, 1 photo, 1 graph. (*"Food Packer," November* 1954, *page* 33)

Quick method for fat and moisture in meat products

Both fat and moisture can be determined on a ten-gram sample of meats or meat products within half an hour by a new combined technique. Water is distilled into a calibrated receiver with capryl alcohol; fat dissolved in the residual alcohol is determined by measuring the electrical capacitance of the solution. 1 page. (*"National Provisioner," October* 23, 1954, *page* 115; *"Meat", October* 1954, *page vii*)

New materials for construction and new knowledge of old ones

In an annual review, the properties of materials for construction are covered in considerable technical detail. Much of the information given is of little interest to food technologists, but there may be some ideas here for that unusual problem. Included are properties of aluminum alloys, cements, ceramics, copper and its alloys, elastomers, fibers, irons and steels (including stainless), lead and its alloys, nickel and its alloys, tin and its alloys, wood, plastics, hard rubber, and paints. 107 pages, 17 photos, 6-page table of plastics properties. (*"Industrial and Engineering Chemistry," October* 1954, *page* 2041)

Phosphates aid meat curing in various ways

A one-page criticism of an article entitled "Facts about Phosphates Found in the Field and the Research Laboratories" (briefed in the November issue of FOOD PROCESSING). President of First Spice Mixing Company points out what he terms "certain inaccuracies" which may lead to false conclusions. (*"National Provisioner," August* 21, 1954, *page* 6)

Minor neglect can cause major shutdowns

A number of operating and maintenance flaws described here can develop easily but may lead to costly failures. Suggestions are given on how to avoid these troubles on boilers, pipe lines, sewers, strainers and filters, and concrete and masonry joints. 2 pages. (*"National Provisioner," September* 18, 1954, *page* 26)

Methods-time measurement speeds clean-up

Methods-time measurement was used in studying and improving clean-up techniques in a dairy plant. Predicted standard times from methods-time calculations were checked by stopwatch and found to agree well except on one operation, where more training time appeared needed for the operator. Improvement of clean-up time by 40% or more resulted from use of the technique. 7 pages, 6 tables. (*"Journal of Dairy Science," October* 1954, *page* 1198)

Details modern scalding practice for poultry

Much recent attention has been given to times and temperatures of scalding poultry. Here is a readable survey of present information, giving meanings of terms used and advantages and disadvantages of various procedures for scalding. 2 pages. (*"Poultry Processing and Marketing," October* 1954, *page* 16)

For pasteurized milk, quick cooling and good early holding are critical

When commercial samples of pasteurized milk were found usually to contain psychrophilic bacteria, detailed studies were undertaken which led to the isolation of one species of *Flavobacterium* and seven species of *Pseudomonas*. These were easily killed by heat, indicating that they were introduced after pasteurization. Although they grew and produced changes in the milk at 40°F, the *Pseudomonas* species grew faster and had shorter lag periods at higher temps up to 80°F. Study re-emphasizes the need for good sanitation after pasteurization and, in view of the effect of temperature on the lag period, stresses the importance of quick chilling and low-temperature holding of the pasteurized milk. 9 pages, 3 graphs, 1 table, 14 references. (*"Journal of Dairy Science," October* 1954, *page* 1164)

New bacon process gives promise of straight-line operation

By a newly-developed process, bacon is cured by injection of pickle and holding for a day, then smoked with infrared heaters and electrostatic precipitators in 30 minutes. Product is good in stability and flavor. Trial unit now produces 1500 lb/hr. 7 pages, 19 photos. (*"National Provisioner," September* 25, 1954, *page* 8 *and October* 16, 1954, *page* 10)

Packages for frozen foods

The chief types of packages for frozen foods are each briefly described and illustrated: various styles of can, jar, carton, bag, wrapper, and coating. Tables summarize important properties, and studies here reported evaluate various packages for frozen storage of ground meat and of poultry and stew. 8 pages, 31 drawings, 2 tables. (*"Food Technology," November* 1954, *page* 490)

Sanitary standards for milk transport tanks

Revised standards are given for tanks used in bulk milk transportation. These have been agreed upon by several professional associations and are correspondingly authoritative. The detail given on materials and fabrication will suggest good practice on other food materials in various storage and handling situations. 5 pages, 1 diagram. (*"Journal of Milk and Food Technology," September* 1954, *page* 273)

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NEW *Aluminum* small trucks BY WEAR·EVER

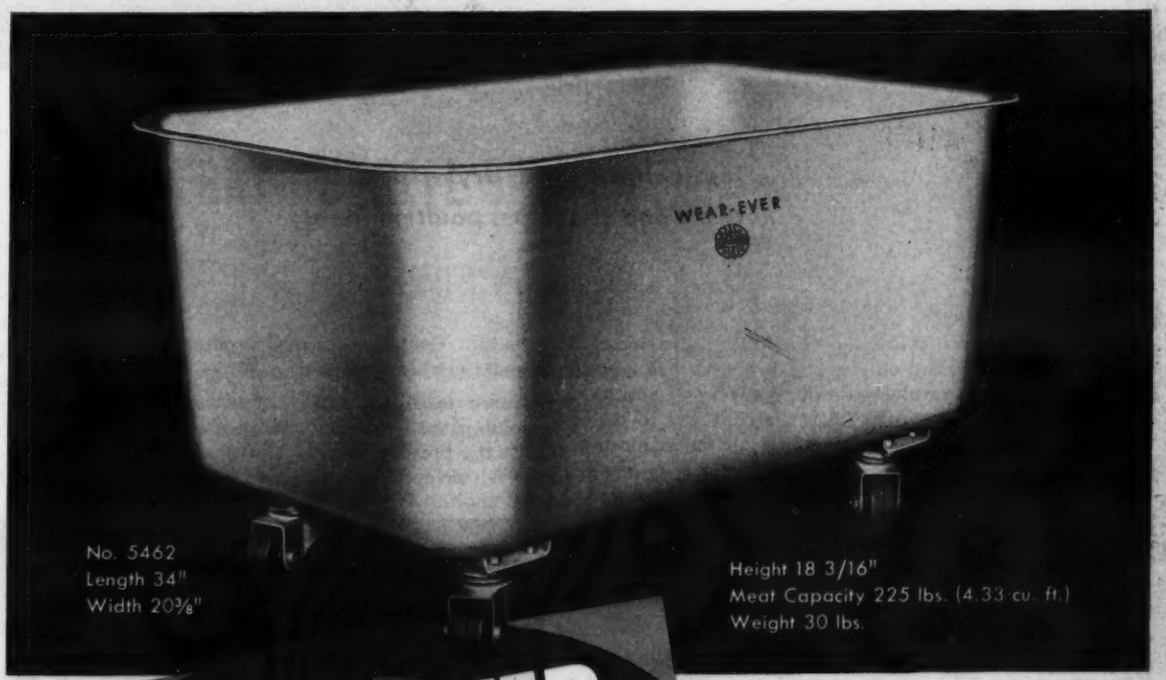
You can probably think of a hundred and one cases where our new small truck can help you speed up your operations.

Lighter than many a baby carriage, it rolls easily, turns on a dime, stores in a minimum of room. It's husky, too—made from a special extra hard aluminum alloy that stands up under hard usage, resists dents and gouging.

You'll like its smooth finish and smart appearance. Welds are carefully ground, corners skillfully contoured for easy cleaning. Hard rubber wheels in husky swivel casters are sturdily mounted at each corner.

But take a look. See if this new economical Wear-Ever truck doesn't fill a long-felt need in your plant. Just call your dealer or send us the coupon below for full details.

Trucks also available in 1000 lb. capacities.



WEAR·EVER

The Aluminum Cooking Utensil Company, Inc., 6701 Wear-Ever Bldg., New Kensington, Pa.

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☐ Have representative see me regarding your trucks

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TITLE_____

Fill in, clip to your letterhead and mail today

When inquiring check FP 1783 on handy form, pgs. 2-3

automatic breading, frying

Automatic equipment for breading, frying (left to right) is dipper, breader, infeed conveyor, and fryer

line feeds-dips-breads-frys-stacks fish, other seafood products, poultry, meat

Fully automatic breading line batter-dips meats, fish, poultry, and other items. Products then move directly into revolving breading drum (see photo). From breader, coated items are conveyed to continuous fryer. Cooked products are mechanically tray-stacked and ready for cooling. Capacity of all equipment is designed to keep up with or exceed capacity of fryer. Frying unit will cook fish sticks or filets at 375°F with a varied speed cook from 30 seconds to 5½ minutes. Capacity ranges from 1000 to 1600 lb per hr, depending on length of frying time desired.

Dipper feed table: Provides means of feeding dip machine with product at a uniform pace. Product is placed on the stainless steel table on either side of the moving belt, and is fed onto the belt by hand. Mounted on casters, unit has water-tite and splash-proof 1/3 hp motor.

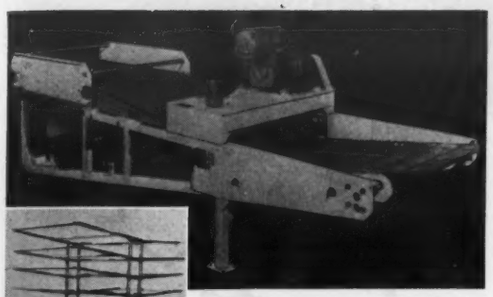
Dip and breader: Batter is contained in dip pan of the unit, then pumped by sanitary pump to distributor on top of machine. The mix fills small reservoir which rests over conveyor. Overflow forms a curtain of batter through which product passes, getting uniformly coated on all sides. Blower provides mild air blast to remove excess batter. Excess batter mix runs back to dip pan, passes through sieve and recirculates back to distributor. Conveyor carries product directly to breader machine.

Breader machine consists of a revolving drum (holding the breader mix) and a conveyor to extract the breaded product and discharge it. Product is conveyed into drum where it is uniformly and completely coated with the breader mix by a gentle tumbling action. After thorough coating, product is picked up by conveyor and discharged onto automatic feeder.

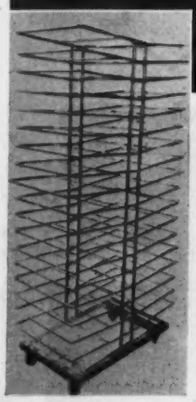
Infeed conveyor and fryer: When used directly with dip and breader machine, infeed conveyor is provided with vibrating chute to transfer product from breader. Vibration also removes excess breader mix before product is deposited into fryer. Then as product is fed into frying fat, frying con-

Dip machine coats product with batter. Mild air blast removes excess batter (see arrow)

Rear view of breading machine showing where breaded product feeds out of drum onto automatic feeder



Portable catch pan provided at discharge end of stacker, to catch any product that may fall off trays when handled

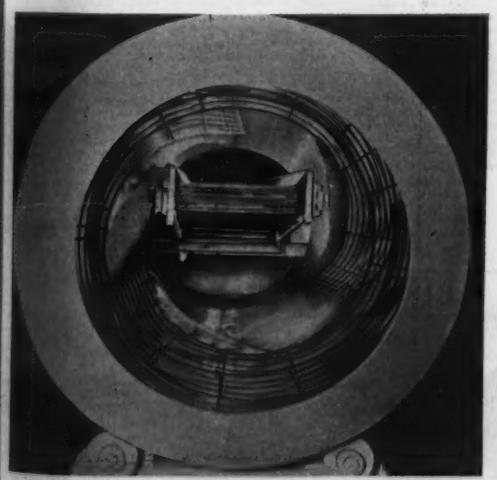


Knock down cooling rack for compact, efficient cooling

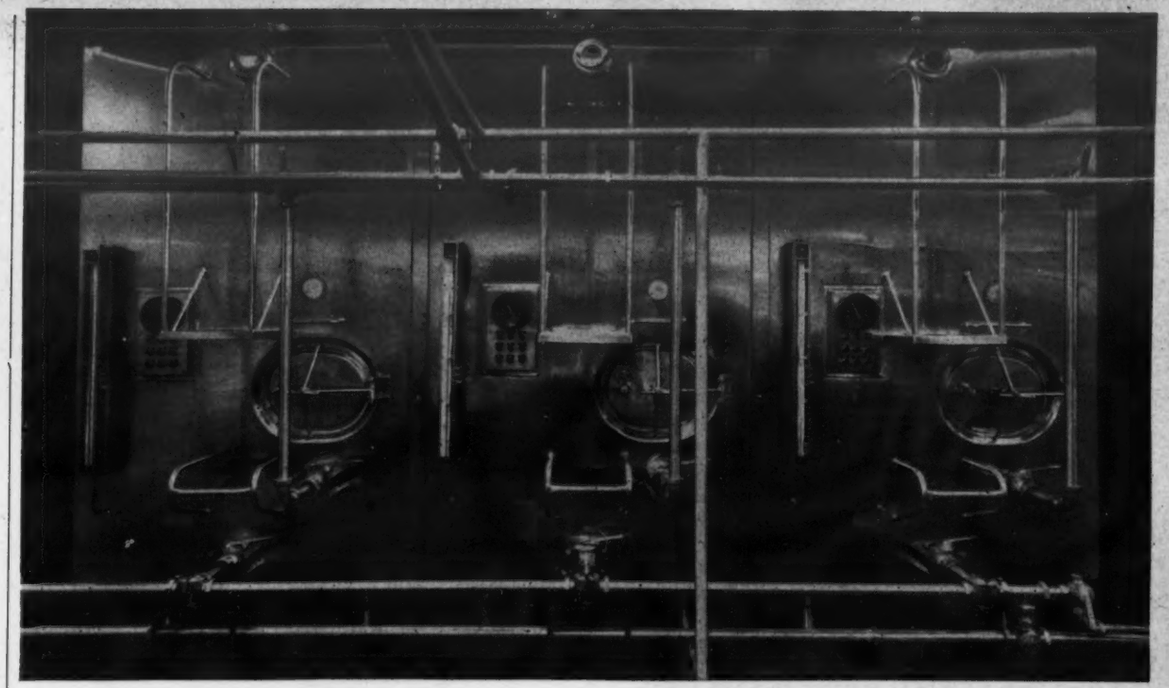
veyor moves it at a steady pace for complete and uniform cooking. Fryer is equipped with circulating fat system to maintain level.

Automatic stacker: As finished product moves out of fryer, it is deposited on stacker conveyor which moves product into position for automatic stacking on cooling trays. Stacker positions trays from a magazine holding about 25 trays. Tray is moved into position by tray conveyor and product gently transferred from conveyor to tray by means of roller. As trays are filled, they are removed and placed in racks for cooling. Speed of

(*Continued on next page*)



Looking into drum of breader showing where product enters and is breaded

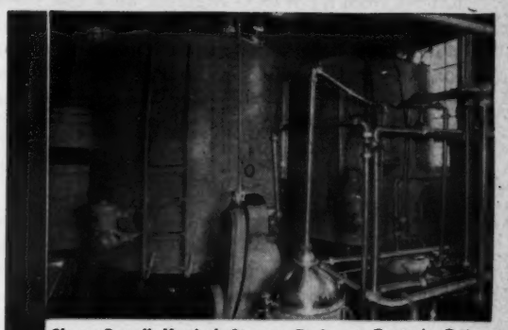


Why CHERRY-BURRELL Storage Tanks are like women!

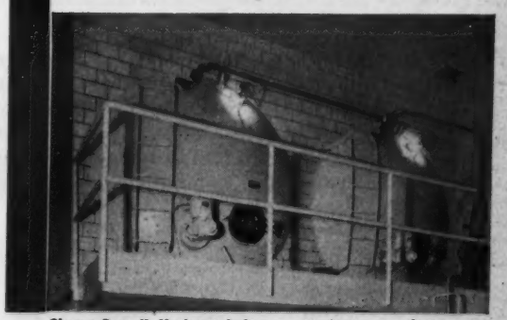
Like women, Cherry-Burrell Stainless Steel Storage Tanks have an endless variety of sizes and shapes; some do more work than others; and, yes, some cost less than others.

The three stainless steel tanks shown above are rectangular, nested side by side to store 8,100 gallons in minimum space. But they don't *have* to be rectangular.

Maybe you'd prefer a 500-gallon horizontal tank, for instance . . . or a 7,000-gallon vertical tank . . . a plain insulated tank or one with Cherry-Burrell's exclusive channel wall surface for cooling. It's up to you. We make 'em to your specs . . . any size . . . any shape . . . for storing or cooling . . . with as many or as few accessories as you wish.



Cherry-Burrell Vertical Storage Tanks at Reuter's Dairy, Evergreen Park, Illinois. Capacity: 2000 gallons.



Cherry-Burrell Horizontal Storage Tanks recessed into the walls at Iowa State College, Ames, Ia. Capacity: 2000 gallons.

ASK THIS MAN . . .

your Cherry-Burrell Representative . . . about our storage tanks. He's prepared to furnish you all the dope you need . . . on the spot . . . to solve your fluid storage problems. See him soon before you wish you had.

CHERRY-BURRELL CORPORATION

427 W. Randolph Street, Chicago 6, Ill.

Equipment and Supplies for Industrial and Food Processing

FACTORIES, WAREHOUSES, BRANCHES, OFFICES OR DISTRIBUTORS AT YOUR SERVICE IN 56 CITIES

When inquiring check FP 1784 on handy form, pgs. 2-3

SCREENING NEWS

Helpful information on screening and separating operations . . . from field reports of **SWECO SEPARATOR** *District Engineers*

High volume screening of granulated beet sugar

A Colorado sugar company sought separation of granulated beet sugar with a range from plus-30 to minus-100. The SWECO proposal: "Production separation at the rate of 3000 lbs. per hour fines to be taken out from a total feed to the screen of 7000 to 7500 lbs. of sugar." Installation was made of a 48" SWECO vibrating screen separator with 38-mesh and 32-mesh screen cloths. Since initial installation, a second SWECO has been purchased to meet increased production rate.

Test on cracked corn

Report from a SWECO engineer on a test for an Ohio mill—Cracked corn, dry, abrasive and granular weighing 45 lbs. per cu. ft. with 13% moisture content and a specific gravity of 1.64. Customer wanted to take out 2000 lbs. per hr. of the finished product. Test results as follows:

Plus 6-mesh	4%
Minus 6-mesh	75%
Minus 14 mesh	21%

Estimated they should obtain a minimum feed of 400 lbs. per hr. on an 18" diameter, or 2000 lbs. per hr. on a 48" diameter SWECO. (Permanent installation was subsequently made.)

Rapid screening on walnut oil cake meal

A California customer uses two 48" diameter SWECO vibrating screen separators to remove shell from walnut oil cake meal. Each machine handles product at rate of 3 TPH. Separators are equipped with 12-mesh cloth and customer verdict is "very satisfactory." Material contains 7% oil.

Free screening analysis and recommendations . . .
SWECO District Engineers are available to make . . . . . *detailed analyses and recommendations on specialized screening operations without cost to you.*
SEND FOR DATA FILE #11-4
Detailed information on applications of SWECO *Screen Separators.*

SWECO SEPARATORS
SOUTHWESTERN ENGINEERING COMPANY
4800 Santa Fe Ave., Los Angeles 58
LOgan 5-6262—Cable: SWECOLA

Engineers and Constructors . . . Manufacturers

(*Continued from preceding page*)

stacker is adjustable to meet varying frying times and products.

(Automatic equipment for breading and frying is a development of Doughnut Corporation of America, Downyflake Breader Mix Div., Dept. FP, 393 Seventh Ave., New York 1, N. Y. . . . or for more information check FP 1786 on handy form, pages 2 and 3.)

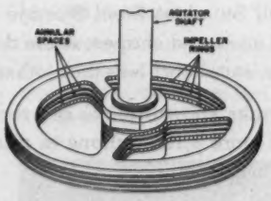
Gearless mixers adjustable to any load

Rotating discs impart rapid motion to liquid—provide thorough mixing action; minimize splashing

Uses: For agitating or mixing of liquids with other liquids, or with solids. By varying number of discs, their size and spacing, and infinite variety of operating conditions can be met — to suit any viscosity or density.

Features: Unit is operated by direct drive — no gears. Rotating discs impart rapid motion to liquid — solely by means of internal disc surface friction — and the liquid is discharged tangentially at high velocity, over entire disc periphery.

Description: Impeller consists of a set of flat rings or annuli spaced one above the other on



Impeller consists of cut rings spaced along agitator shaft. Also available is an attrition impeller which effects size reduction as well as agitation and mixing

At right is top-entering Velofin mixer; also available as side-entering and portable units

WHERE FOODS ARE PROCESSED IN A REVOLVING AGITATING CAGE!
Four BERLIN CHAPMAN Sterilizers at the Streator Canning Company, Streator, Illinois, showing how filled crate is wheeled into the sterilizer . crate revolves slowly at speed of 16 r.p.m.
BERLIN-CHAPMAN
Sterilizer
To obtain better retention of flavor, color, and vitamins, the BERLIN CHAPMAN Sterilizer is widely used by the largest packers of food in the United States . . . originally designed for evaporated milk, hundreds of these machines that have been in use for over twenty-five years are still performing satisfactorily. Usually set up in a battery of 4 or 5 for one line of food at 120 cans per minute . . made in three sizes to hold thirty, twenty, or fifteen cases of tall cans . . equipped with one cage, one cage truck and one set of 96 trays . . all shells are tested to 40 lbs. hydraulic pressure for working pressures up to 20 lbs. Also ASME code stamping.
In operation, the cans are placed in the revolving cage so that they will agitate end-over-end continuously during the cooking period. Cans are first pressure-cooled after cooking, then cooled to atmospheric pressure, all in the sterilizer. The cage revolves slowly at a rate of 16 r.p.m, but the speed of cage may be as low as 5 r.p.m. Write for complete information.
Other BERLIN CHAPMAN equipment includes:
• Vertical Retorts • Rotary Washers
• Brine and Pulp Tanks • Scalders
• Belt Conveyers • Blanchers
• Shaker Graders • Separators
• Rod De-watering Reel • Special Machinery for Food Processing
BERLIN-CHAPMAN CO.
BERLIN WISCONSIN
Food Processing Machinery Since 1909

When inquiring check FP 1785 on handy form, pgs. 2-3

When inquiring check FP 1787 on handy form, pgs. 2-3

agitator shaft. Capacity is changed by changing number of rings or spacing between them.

The long impeller shaft is supported by two heavy ball or roller bearings, as required. Flexible coupling connects motor to impeller shaft.

Mixer known as "Velofin" is available as top-entering, side-entering, and portable units.

(Velofin is a product of H. E. Serner Co., Dept. FP, 26 Journal Sq., Jersey City 6, N.J. . . . or for more information check FP 1788 on handy form, pages 2 and 3.)

Without disconnecting pump, complete accessibility is allowed

Small stainless unit permits full visibility of fluid being pumped

Uses: For handling a wide variety of corrosive chemicals or for non-contaminating service in food, biological, and similar applications.

Features: Design of rear suction and discharge permits complete accessibility without disconnecting pump from line. Pyrex front cover plate provides full visibility of fluid being pumped.

Description: Small centrifugal pump is made of Carpenter No. 20 stainless steel. Maximum capacity is 30 gpm. It will pump against a head up to 24 psi and has a maximum suction lift of 20" of vacuum.

Maximum capacity of pump is 30 gpm

Impeller is connected directly into motor shaft, assuring perfect alignment. Continuous suction on stuffing box reduces possibility of material being pumped entering mechanical seal. Pump is quiet in operation.

(Centrifugal pump is manufactured by Eco Engineering Co., Dept. FP, 12 New York Ave., Newark 1, N. J. . . . or for more information reader may simply check FP 1789 on handy form, pages 2 and 3.)

Hamilton

stainless steel kettles are your best buy . . .

ASME code construction in pressures of 90 or 125 psi., corrosion resistant, designed, engineered and built to deliver high production at a lower cost in sizes 15 gal. to 500 gal. special or standard models. Write today for FREE comprehensive technical bulletin. Dept. F Hamilton Copper & Brass Works, 820 State Ave., Cincinnati, Ohio.

STYLE SA

⅗ jacketed, sanitary cooking kettle. 15 to 500 gal.

STYLE SB

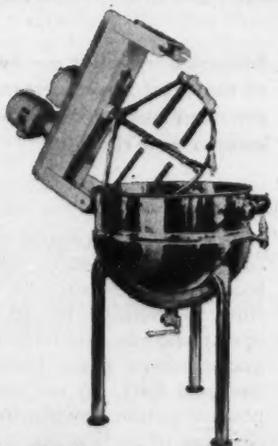
Full jacketed, extra large steam connections. Sanitary cooking kettle. 15 to 350 gal.

STYLE C

Tilting kettle —⅗ jacketed steam inlet and outlet through trunnions on side wall. 20 to 60 gal.

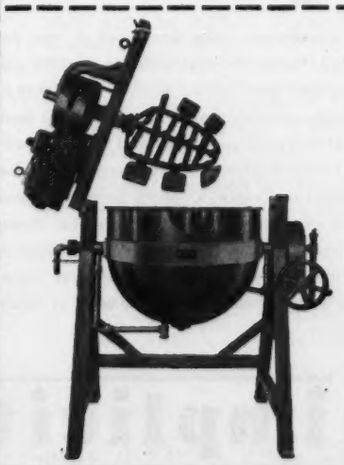
STYLE CW

Controlled tilting kettle ⅗ jacketed — steam inlet and outlet through trunnions on side wall. 30 to 150 gal.



STYLE CG

Mix Cooker — ⅗ jacketed. Furnished with either double motion or single motion agitators. 30 to 500 gal.



STYLE C

Tilting Mix Cooker. Furnished with either single motion or double motion agitators. 30 to 150 gal.

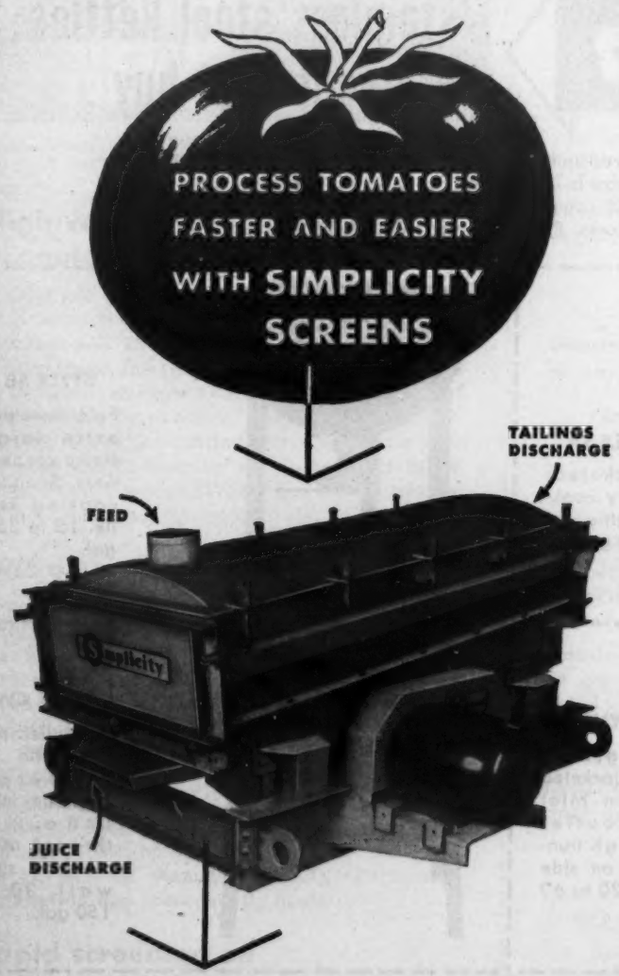
SEE YOU AT THE NATIONAL CANNERS ASSOCIATION CONVENTION BOOTH 116

established 1876

Hamilton copper and brass works

DIVISION OF THE BRIGHTON COPPER WORKS INC. 820 state ave. • cincinnati 4 • ohio

When inquiring check FP 1790 on handy form, pgs. 2-3.



Simplicity Screens can make short work of your tomato processing operations because their fast, efficient gyrating action and large, wide screening area gives you as much as 50% more handling capacity. Simplicity Screens improve the quality of your tomato products, too, because they get every ounce of juice and color . . . all the pectin, all the puree and all the food value . . . out of every tomato, leaving tailings that are absolutely transparent. Simplicity Screens are easy to clean because trays can be changed in just 15 minutes. Maintenance and operating costs are unusually low. For complete information about Simplicity Screens to speed up production, cut costs and improve the quality of your tomato products, write us today.

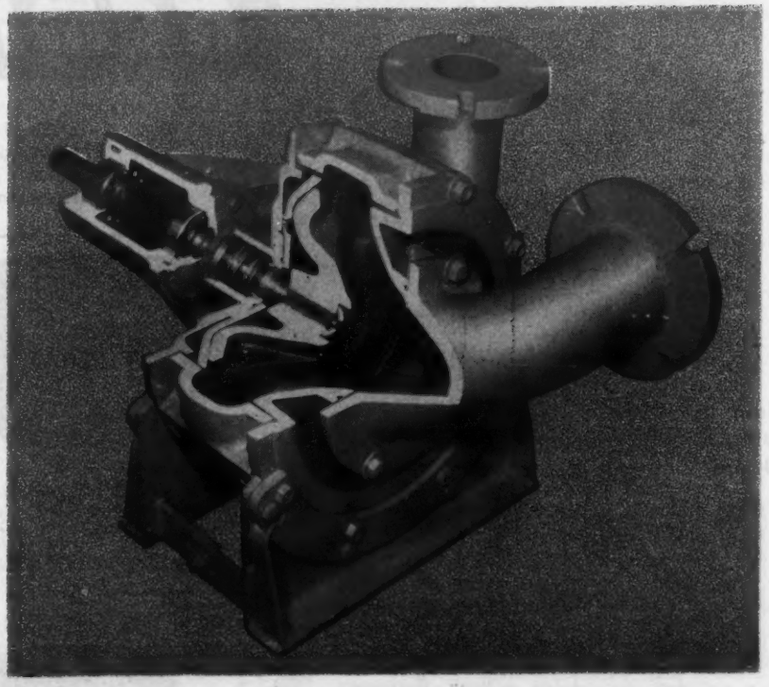
Simplicity
TRADE MARK REGISTERED

ENGINEERING COMPANY • DURAND, MICHIGAN
Sales representatives in all parts of the U.S.A.

FOR EXPORT: Brown and Sites, 50 Church Street, New York 7, N. Y. 139

When inquiring check FP 1791 on handy form, pgs. 2-3

processing equipment



Location of the impeller out of the main flow path insures unobstructed passage of any liquid-solid combination that will pass through the pipe itself

pump imparts "swirl" actio transports delicate food wit

Recessed impeller — entirely out of material flow pattern — provides unobstructed passage, insures non-clogging

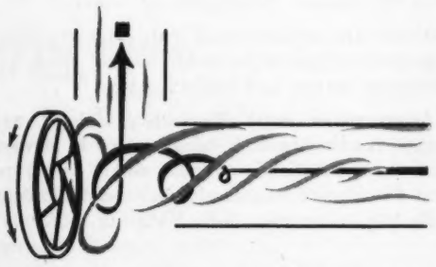
Here's a pump designed to hydraulically convey food products, whether soft, fibrous, coarse, or abrasive, with equal facility. Traveling through a completely open pump case, products such as cherries, grapes, olives, pears, hominy, fish (even live gold fish), are not damaged. Strong, positive suction provides insurance against clogging of suction line.

The recessed impeller, though entirely out of the material flow pattern, induces a vortex (swirl) that does the pumping. Centrifugal vortex action, which is imparted to the fluid, extends into intake pipe, conveys solid materials through pump — generally in a single whirl within the open casing. Rotating fluid mass forms a buffer between the impeller and solid particles in the flow, so that few of them ever touch the impeller, hence no bruising or damaging of the product. This same design feature also provides protection from excessive wear to the pump parts themselves. In addition, since the impeller is out of main flow path it insures unobstructed passage of any liquid-solid combination that will pass through the piping itself, thus eliminating any possibility of clogging.

Solids pump proved in action

Right on the first day of tomato packing season, a large California processor was nearly shut down by a vapor locking pump being used on hot puree line. Vapor lock caused the unit to pump only a fraction of required capacity. Since the plant was

Rotating fluid (induced by impeller) forms the carrying medium. The fluid mass forms a buffer between impeller and solid particles in the flow, so that few of them ever touch the impeller



Centrifugal vortex action extends into intake pipe, conveys "solid" materials through pump — generally in a single whirl within the open casing

...o fluid stream, ...ithout bruising

designed on a continuous flow basis, a stoppage and resulting spoilage could have contaminated a large amount of the plant's output.

A 4-inch torque-flow solids pump was secured. It was found capable of handling three hundred to four hundred gallons per minute of hot (212°F) tomato puree of 8 to 10% solids without vapor locking.

Another installation, handling cherries, has operated a full season without maintenance. In addition, since the cherries (or any other easily damaged solids) do not pass through the impeller, there is no bruising or damaging of the product.

Design features

Pump has been engineered for rapid disassembly, complete or partial, from either end without disturbing piping. Angular adjustment of discharge and inlet direction is possible by rotating pump case or front case housing, respectively, (vertically downward discharge not possible). Dump

(*Continued on page 67*)

The answer to most of your questions about stainless steels are right at your finger tips, when you use Crucible's unique new Stainless Steel Selector.

Want to know the machinability characteristics of a stainless grade? Resistance to corrosion or scaling? Physical or mechanical properties? You can get the answers to these and other questions simply by setting the arrow on the Selector slide at the proper window. It's just as quick and easy as that.

And almost as fast as you get the answer, you can get the steel you need. For many of the REZISTAL stainless steels shown on the Selector are carried in stock in Crucible warehouses conveniently located throughout the country.

To get your free copy just fill in and mail the coupon. Better do it now.

HOW THE SELECTOR WORKS:

Start with the problem. For example, resistance to corrosion in contact with copper sulfate. Just set the slide at the proper index number shown on the Selector (in this case on the back), and you have the answer in a second – grades 302 and 316 are fully resistant to this form of attack.

Crucible Steel Company of America
Dept. FP, Henry W. Oliver Building
Pittsburgh, Pa.

Name_____

Company_____ Title_____

Address_____ City_____ State_____

CRUCIBLE first name in special purpose steels

54 years of Fine steelmaking **STAINLESS STEELS**

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.

When inquiring check FP 1792 on handy form, pgs. 2-3.

When inquiring check FP 1793 on handy form, pgs. 2-3

FROM
FULL SPEED TO STANDSTILL
IN 1/5 SECOND
with
Star-Kimble Brakemotors on American Can Closers
If a can *should* jam on this American Can Company Closing Machine, which handles 300 units a minute at the G. Krueger Brewing Company (Newark), a Star-Kimble Brakemotor stops the machine within a single can cycle—*within one-fifth of a second!*
For split-second stops like this; you can count on the *extra-large* disc area of a Star-Kimble Brakemotor to provide *extra-fast* braking. *Starts* are fast and smooth, too—small air gap assures speedy brake release.
In the toughest of start-stop service, Star-Kimble Brakemotors have run for years with little or no attention. Get the full story on these integral, space-saving brake-and-motor units—write for free Bulletin B-501-A.
STAR-KIMBLE
MOTOR DIVISION OF
MIEHLE PRINTING PRESS AND MFG. CO.
203 Bloomfield Avenue Bloomfield, New Jersey

When inquiring check FP 1794 on handy form, pgs. 2-3

NEW LITERATURE

Reviews of books and industrial bulletins describing equipment, supplies, services

Productivity and cost reduction manual for the meat industry

Modern techniques that increase productivity in meat packing are explained in a 100-page manual. The reader is provided with fundamentals rather than details. Also, "for the first time", this manual provides productivity gages for various packing house operations which may be regarded as yardsticks of performance in various departments. Initial part of the book deals with potential fields of cost reduction, discusses importance of expressing productivity in measurable units and gives careful treatment to such subjects as plant layout, work measurement, and cost control.

Part II deals with various processes, pre-packaged meats, canning, and shipping.

To secure "Productivity and Cost Reduction in the Meat Industry" remit $6.50 direct to the Michael Bannester Organization, Dept. FP, 612 N. Michigan Ave., Chicago 11, Ill.

Report status of cottonseed meal as feed at conference

Proceedings of recent research conference on use of cottonseed meal as feed contains abstracts of 8 seminars involved. Subjects covered include status of feeding tests with hogs and chickens, distribution of pigments and amino acids in cottonseed, solvent-extraction methods, effect of processing on nutritive value, use of fats in animal feeds, and methods of measuring nutritive value.

"Proceedings of Third Conference on Processing as Related to Nutritive Value of Cottonseed Meal" (62 pages) can be obtained from the Southern Regional Research Laboratory, Dept. FP, 2100 Robert E. Lee Blvd., New Orleans 19, Louisiana.

Color, statistical methods, use of SO_2 among topics in "Food Research", Vol V

Contributions of ten authors make up Volume V of "Advances in Food Research". Contains comprehensive coverage of oxidative deterioration in meat, chemistry of sugar-sulfite reaction (sulfur dioxide treatment), technology of treating fruits and vegetables with sulfur dioxide, statistical methods in food research, flavonoid compounds in foods, color problem in foods, and the organic constituents of wines.

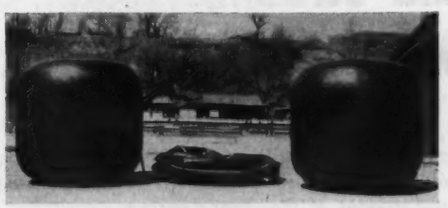
Sections are supplemented with extensive bibliographies of particular field covered. Book has complete author and subject index.

"Advances in Food Research", Vol V, 536 pages, is edited by E. E. Mrak and G. F. Stewart, University of California. To obtain book, remit $11.50 direct to Academic Press Inc., Dept. FP, 125 E. 23rd St., New York 10, N.Y.

Collapsible rubber containers easily filled, stored, shipped

Illustrated, spiral-bound booklets give complete specifications on 70 cu ft and 300 cu ft collapsible rubber containers for handling, shipping, and storing bulk materials.

Photos and drawings show how containers are filled, emptied, transported, and prepared for re-



turn shipment and re-use. Tabulated data includes weight information for flour, starch, coffee, sugar, and rice.

"The New U.S. Seald-Bulk System" Bul. CP-70 and 300 are issued by The Container Products Div., United States Rubber Co., Dept. FP, 1230 Avenue of the Americas, New York 20, N. Y. When inquiring specify 1795 on handy form, pages 2 and 3.

64 pages of data on sprockets and roller chains

A 64-page catalog describes and illustrates a completely new line of ready-to-use finished bore and "taper-lock" bushed sprockets and roller chains. Included in the selection are

minimum-bore sprockets for reboring. Detailed directions are given for selecting stock roller chain drives and chain length calculations. Recommendations are made for installation and lubrication.

Stock roller chain and sprocket catalog No. 754 is issued by Diamond Chain Co., Inc., Dept. FP, 402 Kentucky Ave., Indianapolis 7, Ind. When inquiring, specify FP 1796 on handy form, pages 2 and 3.

Fabricates stainless steel tanks

Four types of stainless tanks for mixing, processing, or storage are fully described in 2-page brochure. Includes outstanding features of each type together with various standard capacities and dimensions available. This engineering firm also fabricates jacketed tanks.

Brochure on stainless steel tanks is available from Potter & Rayfield, Inc., Dept. FP, 1570 Northside Dr., Atlanta, Ga. When inquiring specify FP 1797 on handy form, pages 2 and 3.

How to design, build, operate a modern smokehouse

A 20-page manual gives comprehensive treatment to the subject of smokehouses. It not only covers methods of smoking ham, bacon, sausage, and fish but gives practical tips on smokehouse design and construction. Importance of correct air temperatures, humidity, and circulation are also stressed.

"Successful Meat Smoking" is issued by Koch Supplies, Inc., Dept. FP, 2520 Holmes St., Kansas City 8, Mo. Specify FP 1798, pages 2 and 3.

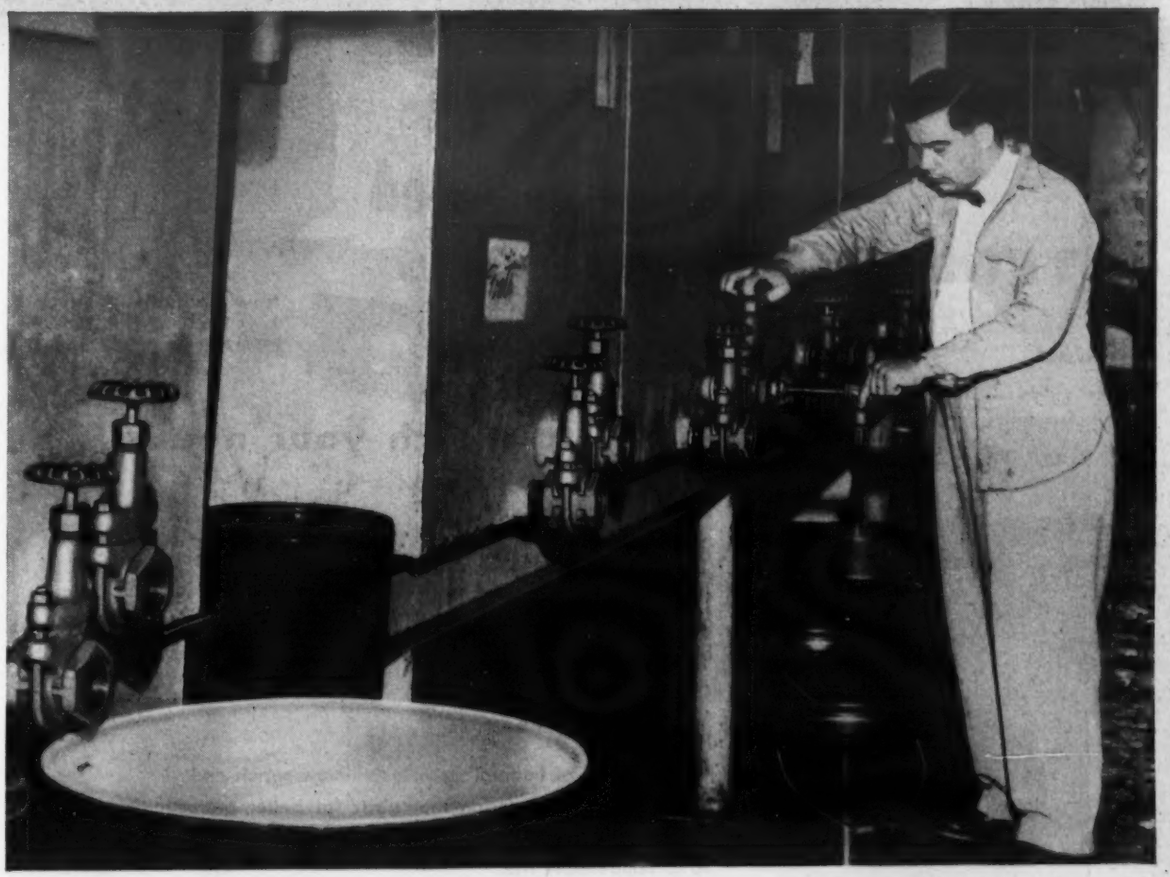
Pumps Without Bruising

(*Continued from page* 65)

valve for instantaneous drainage of pump and lines for quick pump inspection is optional. Capacities from 160 to 4000 gpm (water) are attained with heads to 100 ft.

Units are constructed of Ni Hard or special steels, stainless steel, bronze, and other special alloys to answer corrosion and sanitary problems.

(Wemco Torque-Flow solids pump is a development of Western Machinery Co., Dept. FP, 760 Folsom St., San Francisco 7, California . . . or for more information check FP 1799, pages 2 and 3.)



Leakage troubles here stopped by these CRANE VALVES

THE CASE HISTORY—Read why Hysan Products Co., Chicago, changed to Crane Clamp Gate Valves in all process and storage piping. Hysan makes liquid waxes, pine oil and coal tar disinfectants, liquid soaps, and similar chemical specialties.

Valves formerly used were similar to Crane Clamp Gates, but only in appearance. They lasted no more than 2 to 6 months—leaking at seats and disc with no more than 3 to 12 operating cycles daily. Maintenance and replacement costs mounted—as did down-time losses. The leaky valves on tank lines forced repeated transfer of storage stocks. As many as 3 men were needed to make valve repairs.

All this trouble stopped when the plant installed Crane No. 488 Clamp Gates. After almost 2 years' service, these valves show no sign of wear or leakage. An occasional pull-up on the packing is all they need—and one man handles all piping maintenance.

CRANE CLAMP GATE VALVES

Rugged design with careful, close tolerance machining, especially on seating surfaces, sets these Crane valves apart from others. They give long-lasting tight closure under frequent operation and on hard-to-hold fluids. Many patterns to choose from—all-iron or brass-trimmed. See your Crane Catalog or Crane Representative.

CRANE CO.

General Offices: 836 S. Michigan Ave., Chicago 5, Illinois
Branches and Wholesalers Serving All Industrial Areas

VALVES • FITTINGS • PIPE • PLUMBING • HEATING

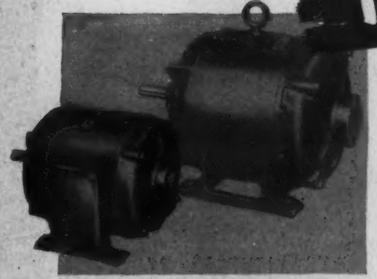
CRANE'S FIRST CENTURY . . . 1855-1955

When inquiring check FP 1800 on handy form, pgs. 2-3

NEW Century Performance-Rated® INTEGRAL H.P. MOTORS

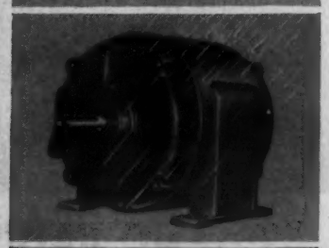
Now available in 1 . . . 1½ . . . 2 H.P. sizes— NEMA frames 182 and 184.

Improved Motors to match your needs



SMALLER — LIGHTER

More uniform silicon-laminated steel; thinner, *tougher* "Mylar" slot insulation — just two of the many technical developments that help make these new Century Performance Rated Motors so much *smaller* and *lighter*.

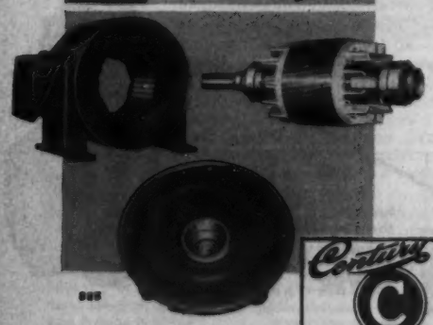


BETTER PROTECTION

New concepts of internal motor ventilation permit end bracket and frame design that gives far better protection from falling liquids and solids . . . still maintain 40°C. temperature rise.

MORE FLEXIBLE MOUNTING

You can even have cushion mounting with these new Century Integral H.P. Motors — your choice of sleeve or ball bearings. Ball bearing motors mount vertically, upside down, in any position. End brackets can be rotated for floor, ceiling or side wall mounting.



EVEN MORE DEPENDABILITY

Improved plastic impregnating varnish and plastic insulated magnet wire provide unusual resistance to abrasion, moisture and heat. These new materials possess far better dielectric qualities. Die cast aluminum rotors are individually, dynamically balanced to assure freedom from vibration.

Century C MOTORS

Specify CENTURY Performance Rated motors for your equipment. Call a Century District Sales Office or your nearest Century Authorized Distributor.

Offices and Stock Points in Principal Cities

CENTURY ELECTRIC COMPANY • 1806 Pine Street • St. Louis 3, Missouri

When inquiring check FP 1801 on handy form, pgs. 2-3

new literature

Design lightweight overshoes to protect against caustics

Described on one-sheet bulletin is overshoe to protect workers' shoes and boots against fats, caustics, acids and edible oil products. Made of "resistant" plastisol compounds, lightweight overshoe slips on easily, is waterproof, has reinforced buckle closure to adjust to individual fit, and has cleated sole and heel. Methods for cleaning, storing, and repairing are explained.

"Ball-Band's Industrial Over" is available from Mishawaka Rubber & Woolen Mfg. Co., Dept. FP, Hill St., Mishawaka, Ind. When inquiring, specify FP 1802 on handy form, pages 2 and 3.

Cartoons offer laughs and warnings to fork truck operators

Pocket size safety booklet combines cartoons and sobering safety warnings to bring home importance of proper fork truck operation. Twenty-eight rules of good practice are illustrated and an additional fourteen are listed. A few of these are: 1) avoid sudden stops; 2) don't butt loads with trucks; 3) face in direction of travel; 4) watch overhead clearance; and 5) never travel with forks raised.

The right fork but still bad safety etiquette

In addition, various types of gas, diesel, and electric trucks are illustrated and briefly described. Twenty attachments and devices are also shown. "Safety Saves" is issued by Clark Equipment Co., Dept. FP, Twenty-Four Street, Battle Creek, Mich. When inquiring specify FP 1803 on handy form, pages 2 and 3.

Summarizes technical information on Thanite — insect toxicant

Twenty-four page booklet is compilation of technical data on the properties and uses of Thanite, insect toxicant. Major application is in the control of flies; it is also used in controlling mosquitoes,

silverfish, ants, and cockroaches. Formulations and application results are given for various uses. Appendix includes physiological application data, methods of assay.

Thanite is a 100% active toxicant composed of a minimum of 82% isobornyl thiocyanoacetate or equivalent, and a maximum of 18% other active related terpenes.

Booklet, "Thanite, an Insect Toxicant," is issued by Hercules Powder Co., Dept. FP, 954 Market St., Wilmington 99, Del. When inquiring specify FP 1804 on handy form, pages 2 and 3.)

Evaporator cleaning charts can be hung up near job

Chart for in-place and circulation cleaning is clearly printed on opposite sides of heavy cardboard 11 x 17", which is punched for hanging close by the job. Wording and details of the drawings are easily visible at a distance. Directions are given for cleaning single effect and multiple effect evaporators, HTST pasteurizers and permanent pipelines.

C-I-P and circulation cleaning charts (Form 2117) are issued by Wyandotte Chemicals Corp., Dept. FP, Wyandotte, Mich. When inquiring specify FP 1805 on handy form, pages 2 and 3.

Lists dimensions, specifications for screening equipment

Equipment for removing solids from water, sewage, and industrial waste is fully described in 28-page book, illustrated with over 30 photos. Includes dimension and specification data for 4 types of coarse and 3 types of fine screens, and tables to determine proper size unit to use.

Book 2587, "Screening Equipment", is available from the Link-Belt Co., Dept. 122-FP, 307 N. Michigan Ave., Chicago 1, Ill. When inquiring specify FP 1806 on handy form, pages 2 and 3.

Explains how to choose right filter cloth

Guide for choosing best filter cloth covers Dynel, Nylon, Orlon, Polyethylene, and Saran materials. Features charts of chemical and temperature resistance, case histories using company line of filter cloths. "Feon Synthetic Filter Cloth" (6 pages) is issued by Filtration Engineers, Inc., Filtration Fabrics Div., Dept. FP, 155 Oraton St., Newark 4, N. J. Specify FP 1807, pages 2 and 3.

Now... they're even PUMPING POTATO SALAD!

An example showing how the versatile MOYNO® PUMP may solve your pumping problem

As you can imagine, any conventional pump would quickly make *mincemeat* out of potato salad! But not the versatile MOYNO Pump! In fact, this unique pump was the answer to a years-old materials handling problem in an Eastern food processing plant.

Why? Because of the Moyno *"progressing cavity" principle*—found in no other pump. Instead of valves and pistons that stick, or vanes that cause churning and turbulence, the Moyno has a simple rotor, operating within a stator. The small illustration shows how progressing cavities are formed as the rotor turns. These cavities move along smoothly, without closing up or squeezing the material. That's why Moynos carry liquids, pastes, solids in suspension, abrasive-laden slurries—*almost anything that will go through pipe*—with positive, non-pulsating pressure!

Potato salad is only one of the many successful, dramatic applications for Moyno Pumps. You may be able to save money or solve a problem by finding out more about the world's simplest, most versatile pump!

If you have a pumping application—in your plant or in your product—write today for free copy of Bulletin 30-FP. It will give you complete facts!

Features of the MOYNO that may solve YOUR pumping problem

Positive Displacement—Moynos are available to pull up to a 29" vacuum while discharging under pressure. Big Moynos deliver up to 250 g.p.m. at pressures to 600 p.s.i.

Gentle—no churning; won't break up semi-solids . . . won't aerate liquids.

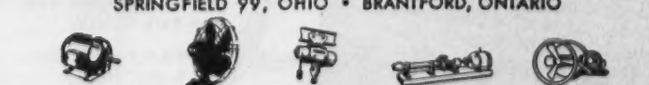
Reversible—pumps with equal efficiency in either direction.

Trouble-Free—self priming; won't cavitate or vapor-lock. Just one moving part—no valves to stick, no pistons to gum up. Built for tough service. Easy to maintain.

See Moving Pumps at Booth No. 107, National Canning Show, Conrad Hilton, Chicago, February 19 to 23.

ROBBINS & MYERS, INC.

SPRINGFIELD 99, OHIO • BRANTFORD, ONTARIO

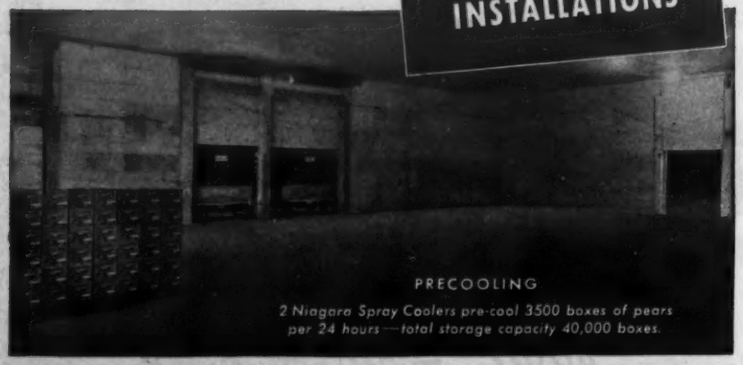


Fractional & Integral h.p. Motors & Generators | Electric Fans | Electric & Hand Hoists & Cranes | Moyno Pumps | Propellair Industrial Ventilating Equipment

When inquiring check FP 1808 on handy form, pgs. 2-3

NIAGARA "No-Frost"

SUCCESSFUL IN BIG INSTALLATIONS



PRECOOLING

2 Niagara Spray Coolers pre-cool 3500 boxes of pears per 24 hours—total storage capacity 40,000 boxes.

FOOD FREEZING

Hardening 10,000 gal. of ice cream per day at —30° F.

FROZEN FOOD STORAGE

Room 80 ft. x 135 ft.—Temperature —5° F.

NIAGARA "No-Frost" gives you extra capacity and better operation. It improves quality, especially in foods, where it brings the product to correct temperature faster and holds it without fluctuation. It saves money for you in the cost of power and labor. With Niagara "No-Frost" there is never any "de-frosting" loss of time or temperature rise.

Write for Bulletin 105

NIAGARA BLOWER COMPANY

Dept. FP, 405 Lexington Ave.
New York 17, N. Y.

Sales Engineers in Principal Cities of U. S. and Canada

When inquiring check FP 1809 on handy form, pgs. 2-3

Ortho fieldman inspecting bean plants for insect injury

Systematic weekly field inspections by pesticide manufacturer's trained servicemen helps Patterson Frozen Food to

prepare for insect, disease outbreaks without carrying pesticide inventory

A new field service by a manufacturer of pesticides is helping Patterson Frozen Food Company of Patterson, California, to cut crop losses and avoid carrying a warehouse inventory of insecticides and fungicides. The entire pesticide control program is entrusted to professional entomologists and plant pathologists, who inspect the growing crop and prescribe type and amount of control materials to use.

Patterson contracts annually with about 40 growers. In some years crop losses have been so severe that expected returns are cut as much as 50% (includes field loss and reduced return from low-graded raw product). In certain fields where the grower used no insect control measures, lima production would be as low as 600 lb/acre. Although several company executives have professional field training, their other activities prevent careful supervision of controlling crop insects and diseases.

In 1950 Patterson began cooperating in a new program, called Ortho customer field service, to use the help of entomologists employed by a pesticide manufacturer. The

In these containers are materials needed to protect the crops for Patterson Frozen Food Company from damage by insect and disease pests. Left to right, these packages contain: (top row) Alltox-Mite 7.5, Persisto-Mite 5-3 dust, Presisto 5 dust, Persisto S 5-50 dust, (middle row) Pest-B-Gon 2 spray (50 gal drum), Alltox 8 spray, (bottom row) Alltox S 10-50 dust, Alltox 10 dust, Persisto 10 dust

first year's program was a success. Each year it has been augmented so that last season the procedure was as follows: Patterson's management sets up the program by introducing the manufacturer's branch manager and entomologists to the growers, recommending that they make uses of these specialists' advice. Patterson has no real authority or jurisdiction over the contracting growers. They are not obligated in any way to follow either Patterson's or the entomologist's recommendations even after the arrangements are made.

Once a week the Ortho men examine the contracted fields. At bloom time, for example, they are watching the lima plants for lygus and thrips. If they are present, the specialists will recommend airplane dusting with Persisto (DDT) and Alltox (toxaphene). After the pod is formed, they inspect for army worms and bean lycaenid. In July and August they look for leaf miner and treat with Ortho (dieldrin) and Persisto dust. Fordhook limas must be watched for red spiders, which are controlled by Vapotone (TEPP) or Orthomite (aramite). Per acre cost for insect control averages $6 in the baby lima fields and $8 to 9 in the Fordhook acreage.

The worst threat to the spinach and broccoli is aphis, which can be destroyed with Vapotone. This material vaporizes rapidly and can be used up to two days before harvest time without danger of residue being left on the plants. When downy mildew attacks spinach, Orthocide (captan) dust is recommended. Cost of two Orthocide treatments will average around $8.50/acre. Growers have had yearly losses from downy mildew of $50 to 75/acre.

When field inspections show the need for treatment, the Ortho specialist writes up a field memorandum. One copy goes to Patterson and one to his office. The original is presented to the grower and a date is arranged right on the spot for delivery of the material. Both delivery and billing is made direct to the grower.

Since the Ortho program has been in effect there have

(*Continued on next page*)

Besides controlling pests, residues on the harvested crop must be kept low enough so that plants may be used for livestock feed

Send for FREE *Florida* Information Kit

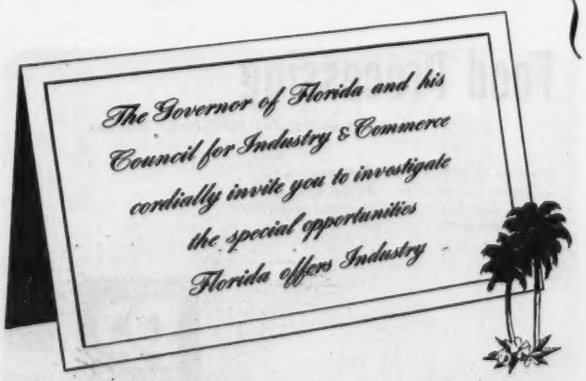
Industrialists and businessmen considering plant location, relocation, regional branch plants, offices and warehouses will find this kit a source of valuable guidance. Ten new solidly factual folders, conveniently packaged in a tabbed file cover, present what you need to know before selecting your location.

For your copy, write: State of Florida, Industrial Development Division, 3406C Caldwell Building, Tallahassee, Florida.

Information Kit Folders:

MARKET · RESEARCH · POWER · LABOR
HEALTH & CLIMATE · NATURAL RESOURCES
GOVERNMENT & TAXES · WATER
EDUCATION & CULTURE · TRANSPORTATION

Plan national sales conventions, sales conferences and state and regional meetings for Florida. Exceptional facilities for any type of meeting. Get double value... successful meetings in delightful surroundings plus colorful recreational activities.


The Governor of Florida and his
Council for Industry & Commerce
cordially invite you to investigate
the special opportunities
Florida offers Industry

you'll always do better in *Florida*

When inquiring check FP 1810 on handy form, pgs. 2-3

Have you wondered why this magazine comes to you ...without charge?

MAYBE, LIKE MANY others, you've always thought that all publishers make their money, or much of it, from the subscriptions they sell.

'Tisn't so . . .

. . . no, 'tisn't so. With the exception of a few general magazines (e.g. READER'S DIGEST) that sell hundreds of thousands – some millions of copies – most industrial publishers with relatively small circulations actually lose money on their subscription sales.

Then how do industrial publishers make money? As you can guess, they make it from the advertising they sell. *Total subscription sales are hardly a "drop in the bucket" compared to advertising revenue.*

Advertisers demand best coverage

Since advertisers pay the bills, they demand best possible coverage of all important men in the field. So it's up to the publisher to publish the most readable magazine possible . . . then to insure coverage of the maximum number of the best readers.

You can't do that by selling subscriptions – sales costs are high – a large share of the subscribers cancel each year – and no matter how much time, money, and pressure is used there are always some of the important men who will never buy.

As you can see, the most effective method of getting the kind of coverage advertisers want is (a) to hand-pick the most important men; (b) send the magazine to ALL these men; and (c) to make the magazine so interesting, so valuable that they will want to read it.

That's why . . .

That's why Food Processing is sent only to qualified readers . . . selected management and technical key-men in the food industry; that's why you get Food Processing free – that's why we spend thousands of dollars on each issue to make it worth your time to read it. For you are an important reader in the food processing field.

Food Processing

Published by Putman Publishing Company

Creators of PUTMAN-STYLE Magazines
. . . terse, vital editorial; "hand-picked" circulation; square, high-visibility format; quality readership; hence more READER ACTION

PUTMAN PUBLISHING

ABP ABC

(Continued from preceding page)

been no crop losses from insect damage. There has been complete cooperation from the growers, once they understand the importance of the program. Patterson's management has seen that the Ortho program — from results to be seen elsewhere in the area — paid off. Entire lima acreage under the Ortho program has been averaging 2500 lb/acre.

The pesticide manufacturer considers this new program as a "customer service" and no fee is asked or expected.

(The Ortho field setvice similar to that of the Patterson Company is being carried out in many sections of the country by the California Spray-Chemical Corp., Dept. FP, Richmond, California . . . or for more information check FP 1811, pages 2 and 3.)

One tablet in 100 gal of water makes spray for cherry leaf spot

Antibiotic fungicide used effectively during past summer by numerous growers

An antibiotic fungicide spray compounded from actidione was used extensively during the past summer by growers in controlling cherry leaf spot. It has been shown to kill fungus even after it has been established for periods up to 96 hours. When applied before leaves turn yellow from infection, it reduces premature leaf fall.

Product is packaged in glass, 100 tablets (@ 380 mg) to each tube. Dissolving one tablet in 100 gal (hppm) of water makes a suitable solution.

Effect of spray is not reduced by rain after it has had at least one hour to set. It is non-staining and compatible with many non-alkaline insecticides.

At present it is not recommended for use as a pre-harvest spray on bearing trees. It is suggested for use as a post-harvest spray on cherry trees, nursery cherry trees, 1-2 year old transplanted trees and non-bearing trees.

(Actispray compounded from actidione is a development of The Upjohn Co. and available from Niagara Chemical Div., Food Machinery and Chemical Corp., Dept. FP, Middleport, N. Y. . . . or for more information check FP 1812 on handy form, pages 2 & 3.)

Analysis with titrator speeds spray residue determination

Method measures concentrations below 0.1 ppm quickly and reliably on routine basis

By means of an automatic titrator, quantitative determination of spray residues for halogen containing pesticides (aldrin, dieldrin, isodrin, endrin, DDT and analogs, lindane, aramite, ovotran, and sulphe-

none) may be made rapidly and reliably, even in instances where samples contain less than 0.1 ppm of the pesticide in question.

Recently the University of California Citrus Experiment Station, Riverside, adapted this improved technique for study involving dieldrin spray residues. In the course of this study the lab ran a 24 hour shift for several months, analyzed some 500 samples.

While determination of chlorine content has been used in the past as a measure of amount of pesticide present, the usual methods have been considered unreliable. This difficulty is because fatty acids, sometimes present, cause interference by co-precipitating while the sample is titrated with $AgNO_3$. These fatty acids are liberated by the saponification step used to liberate organically bound chlorine from plant extracts containing pesticide residues. Although most of these fatty acids can be precipitated and removed, some frequently remain.

Technique is described in application data sheet K-17-A issued by Beckman Div., Beckman Instruments, Inc., Dept. FP, Fullerton, Calif. When inquiring specify FP 1813, pages 2 and 3.

Economy plus reduced hazards offered in seed disinfectants

Liquid type eliminates problem of uniform dispersion; dust has low animal toxicity

High effectiveness, easier application and greater economy are offered in two new seed disinfectants — one in liquid form, the other a dust.

Liquid is non-volatile, reducing inhalation hazard and contact with skin. It is a true solution and presents no problem of uniform dispersion that wettable powders do. A blue dye has been added to this mercurial disinfectant to permit easy recognition of treated seed. It controls damping-off and certain smuts and blights at the economical dosage of ½ oz/bu of seed; making cost of treatment about 2½c/bu.

The dust type disinfectant controls damping-off, leaf stripe, and certain smuts and blights. This mercury-cadmium product has no measurable volatility and its animal toxicity is of a lower order than other mercurials or metallic compounds. Applied as a dust at rate of ½ oz/bu. When used as a slurry 16 to 48 oz of dust are required to a gallon, depending upon type of seed to be treated. Four to five oz of slurry are used to each bu of seed. Cost of dust or slurry treatment per bu is approximately the same as that of the liquid.

(Gallatox liquid and Puraseed dust disinfectants are developments of Gallowhur Chemical Corp., Dept. FP, North Water St., Ossining, N. Y. . . . or for more information check FP 1814, pages 2 and 3.)

DUR-ACE is a moderately priced, general-purpose, rigid plastic pipe with exceptional impact strength. For handling most inorganic acids, salts, alkalis and many organic chemicals, it's the equal of plastics that cost far more. Light weight, odorless, tasteless. Temperatures minus 40 to 170° F. Sizes ½ to 2", with fittings. Dur-Ace is only one of *eight* types of rubber and plastic pipe now made by ACE. Write today for free technical bulletin 80-A.

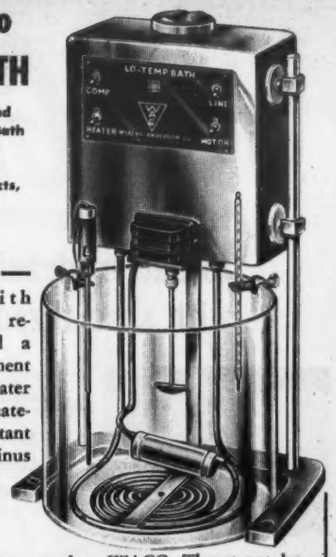
ACE rubber and plastic processing equipment • SINCE 1852

AMERICAN HARD RUBBER COMPANY, 93 Worth St., New York 13, N. Y.

When inquiring check FP 1815 on handy form, pgs. 2-3

NEW Waco LO-TEMP BATH

With Refrigerating and Heating Units in One Bath
USED BY
American Can Co.,
American Maize Products,
Armour & Co. and
many others.



WIDE RANGE — Visibility bath with BOTH a mechanical refrigeration unit and a 300 watt heating element . . . ideal when tap water coils CANNOT adequately cool. Provides constant temperature from Minus 5C to Plus 65C.

SENSITIVITY — Mercury thermoregulator and a WACO Thyratrontube Relay controls within plus or minus .01C.

CLEAR WORKING SPACE — The compact housing at back of jar leaves mouth of jar open.

Laboratory Supplies and Equipment
WILKENS-ANDERSON CO.
4525 W. Division St. Chicago 51, Ill.

COMPLETE UNIT $320.00
WRITE FOR LITERATURE CB-10

When inquiring check FP 1816 on handy form, pgs. 2-3

New Plant Equipped with

FRICK Refrigeration

This million-dollar plant in Boston gets dependable refrigeration from two Frick 8" x 8" ammonia compressors and a completely automatic system for cooling 12 rooms. A 7½-ton unit provides air conditioning for the offices. Henschien, Evards & Crombie of Chicago are architects for this ultra-modern packing house.

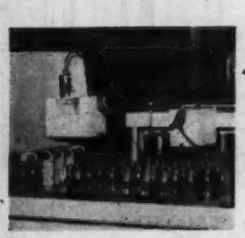
You get the ultimate when you specify FRICK refrigerating, air conditioning, ice-making or quick freezing equipment. Ask for estimates now on the cooling system you need.

DEPENDABLE REFRIGERATION SINCE 1882
FRICK CO.
WAYNESBORO, PENNA. U.S.A.

When inquiring check FP 1817 on handy form, pgs. 2-3

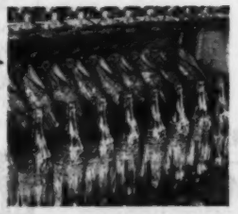
the RIGHT answer

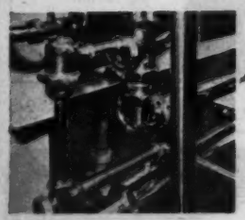
to better cleaning at much lower cost with specialized Oakite materials



OAKITE COMPOSITION No. 6
Lubricates and cleans conveyor chains... eliminates bottle breakage.

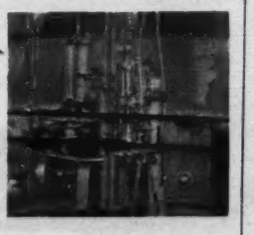
OAKITE COMPOSITION No. 53
Better bottle washing... fewer re-runs... less caustic up-keep.





OAKITE BACTERICIDE
Faster mold and bacteria-killing action.

OAKITE COMPOSITION No. 63
Syrup room sanitation... washing painted surfaces... general cleaning.



OAKITE COMPOUND No. 32
Descaling refrigerating equipment, bottle washers... no dismantling.

This 32-page guide to low-cost sanitation tells how to clean better, faster, with complete safety to equipment. It describes and illustrates job-tested Oakite methods for cleaning kettles, cookers, fillers, smoke-houses, refrigerator trucks; for controlling bacteria, mold, slime, odors; for lubricating conveyor chains; for removing rust and lime scale from water-circulating systems.

Write for your FREE copy today. Oakite Products, Inc., 27A Rector St., New York 6, N. Y.

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
MATERIALS · METHODS · SERVICE

Technical Service Representatives in Principal Cities of U. S. & Canada

When inquiring check FP 1818 on handy form, pgs. 2-3

Applied by plant personnel, reinforced Fiberglas lining withstands hot water, salt effects, and

makes old steel tank corrosion-proof

BROR J. GRONDAL, Engineering Dept. General Foods' Atlantic Gelatin Division
as reported by **FP staff**

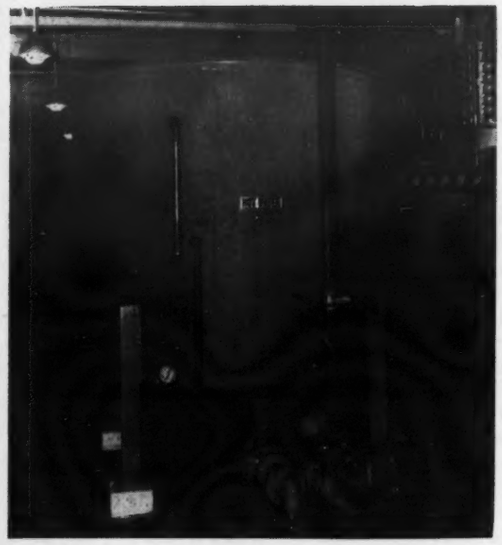
Problem: There was a trouble-maker in the plant of General Foods' Atlantic Gelatin Division, Woburn, Mass. Culprit was a 1500 gallon tank used for storing hot water. The internal surface was rusty and uneven because of many years' service in grease storage, and from an accumulation of welding alterations. The plant engineering department became interested in possible methods of reconditioning the tank so that it would be corrosion-resistant, and would also withstand the 160° to 180°F temperatures of the water.

Solution: Plant engineers relined the tank with a Fiberglas reinforced Celanese liquid plastic which is applied by brushing, and polymerizes to become a heat-resistant, corrosion-proof coating without the necessity of baking or heat-curing.

Inside surface was prepared by soaking and thorough washing with strong soap and hot water to remove grease. This treatment was followed by a brisk brushing with steel wool to remove rust. Tight clinging rust was left on to provide a better grasping surface for the resin.

First step in application is to apply a liberal coat of the resin to dry, clean interior. This material is a liquid plastic formula, consisting of polyesters of glycols, with maleic or fumaric acid dissolved in styrene. A catalyst solution is added just before application which initiates and

Steaming hot water doesn't affect the coating. Interior was first coated with plastic. Plastic saturated glass cloth was fitted to interior, overlapping the flanges as shown above, and allowed to harden. Then, final coat of plastic was applied



Plant personnel at General Foods' Gelatin Division lined this 1500 gal tank, using reinforced Fiberglas and plastic materials

accelerates polymerization. The resin is converted to a hard, glass-like finish at room temperature. Styrene acts as a thinner for the esters, then it too polymerizes completely.

Resin formula in this application was polyester and styrene, into which 1½% paste catalyst and 1½% accelerator were stirred before use. This formula remained liquid long enough to hand-brush for one hour. Thus, only enough liquid was prepared to be applied within this time. Usual batch was two quarts for one man working with a three-inch brush. Methyl ethyl ketone is used to clean brush after use.

Before the first coat of resin on the tank had hardened, the Fiberglas cloth was applied to the tacky surface and then saturated with resin. Cloth, which was 42" wide, was cut to fit the round tank bottom, with two inch overlap, and extended up the straight sides of tank for 6 inches. Sides were covered with vertical strips, which extended over the outside flange. Inside of bottom outlet pipe and face of bottom flanges were similarly covered with plastic and cloth. Side connections for thermometer and gage glasses, made of stainless steel pipe, were extended into tank, and sealed with the glass reinforced plastic lamination.

After several hours for hardening of the first coat, a seal coat of plastic was applied to the laminate for a smoother finish and improved protection.

While lining was being applied, tank was laid on its side, and rolled to suit convenience of the applicator. He used a piece of light gage shim stock to smooth out the glass cloth while sticking

(*Continued on next page*)

"People often are hoggish about paper towels."

WITHOUT realizing it they'll use from two to four single fold towels just for drying.

— wasting as much as 40 inches of paper toweling.

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How?

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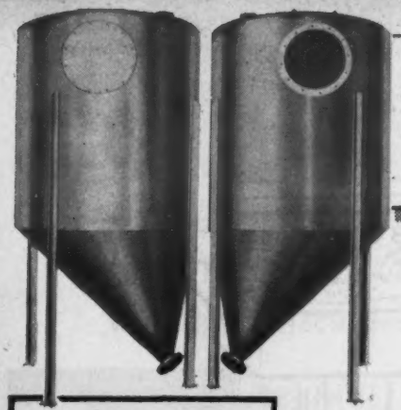
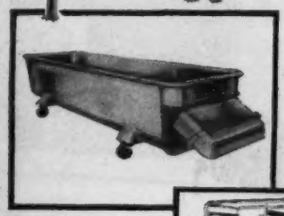
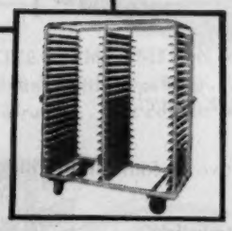


Double Conical Hopper Tanks



Stainless Steel Dough Troughs



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As the result of more than forty years of metal fabricating service to the food industry, Glasco have the metallurgical and engineering know-how to fabricate equipment that will give maximum trouble-free service.

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South: Henry H. Harris Co., 44 Norwood Place, Greenville, So. Car.
New England: Harris & Underhill, 446 Statler Bldg., Boston, Mass.

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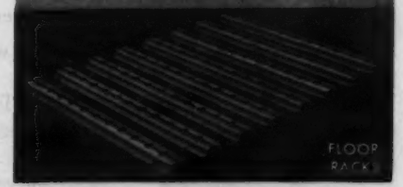
STOP

"REEFERS" FROZEN FOOD—MEAT—ICE CREAM CARRIERS

HEAT TRANSFER with

ALUMINUM VENT FLOOR RACKS—SIDE RAILS

GOVERNMENT CONDUCTED TESTS PROVE $$ SAVINGS



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Available with racks hinged to permanent or removable side rails. Racks swing up for accessibility to load. Easily removed for cleaning. They are LIGHT WEIGHT!

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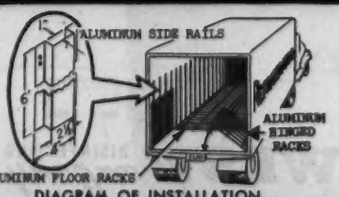


DIAGRAM OF INSTALLATION

ALUMINUM PALLETS
SKIDS — TRUCKS — RACKS

Louisville Metal Products Company

1101 WEST OAK ST.
LOUISVILLE 10, KENTUCKY

When inquiring check FP 1821 on handy form, pgs. 2-3

(Continued from preceding page)

it to the tacky surface of the first resin coat. A portable fan was used to direct fresh air into tank to remove styrene fumes.

Results: Tank has been in continuous service for hot water storage (160°-180°F) for a year, and lining is still in good condition. Should it need repair in any spots in the future, a simple patching job with the same materials originally used can be done quickly.

Other plant jobs have been converted to the reinforced plastic lining since this first job, with excellent results. A salt truck, whose steel interior had been considerably thinned and weakened by corrosion, was cleaned and lined with the polyester-Fiberglas combination. This coating strengthened the truck, and gave it a smooth corrosion-resisting surface over which the salt flows readily.

Such linings are capable of withstanding temperatures in range of 225°F in regular service.

(Fiberglas, used in cloth, is product of Owens-Corning Fiberglas Corp., Dept. FP, 598 Madison Ave., New York 22, N.Y. . . . or for more information check FP 1822 on handy form, pages 2 and 3.)

(Polyester resins can be obtained from Celanese Corp. of America, Marco Div., Dept. FP, 180 Madison Ave., New York 16, N.Y. . . . or for more information check FP 1823 on handy form, pages 2 and 3.)

Ever read a magazine article and . . .

WANT MORE INFORMATION?

Probably you have, because no article can cover all points of specific interest to you. Your next step is to get in touch with the company whose product or idea has been discussed. It doesn't take long to dictate and mail a letter, providing you have a secretary, if — and it's a big IF — you have the complete address, as well as the name of the company.

If the article doesn't give this vital information you have two choices: start searching or forget about the whole thing.

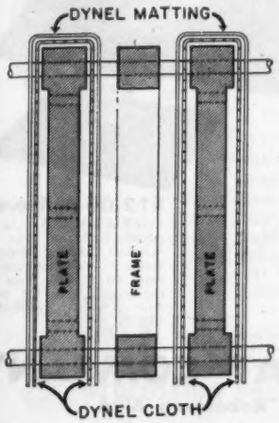
Articles in FOOD PROCESSING don't say "good-bye" and leave you stranded without directions on how to proceed on your own. Name of company and complete address with "key number" are right there in the last paragraph. This "key number" enables you to get more information with an absolute minimum of time and effort and without service of a secretary. Just check the number on the handy readers service slip — pages 2 and 3 and mail. No postage is required.

That's one of the ways we achieve our basic editorial objective of being as helpful as possible to a reader in keeping him abreast of the latest developments in his field.

Rim cutting of fabrics eliminated on plate and frame filters by felt-like mats

Placed over cloth on plates, mat acts as gasket that reduces press leakage

Using felt-like mats on plates of filter presses eliminates rim cutting of fabrics and reduces plate leakage. Made of Dynel, Union Carbide's chemical-resistant fiber, matting is placed over filter cloth on each plate and serves as gasket for each frame when plates and frames are brought together. Full operating pressure can be built up quickly, without delay in waiting for cake build-up.



Cross-sectional view of plate and frame filter illustrates how Dynel matting fits over cloth (in this case, also Dynel)

Material has been used successfully on both wooden and metal presses. On some of the latter, it has been found that it can be used as a single layer, without cloth, to minimize bulking. Matting can be sewn like cloth and is available in widths from 12 inches to 72 inches. It has good tear strength and doesn't lose any strength when wet, providing additional efficiency.

(Method for eliminating rim-cutting of fabrics was developed by Flaherty Filter Fabrics, Dept. FP 1025 Clinton Avenue, Irvington, New Jersey . . . or for more information check FP 1824, pages 2 and 3.)

Economical thread repairs made possible by handy maintenance kit

Economical, handy kits have been designed to provide maintenance man with a quick solution to his tapped thread repair problems in the industrial plant. Company offers choice of two kits for plant maintenance use: the 34CS kit with inserts and tools in four sizes, and a wider range kit containing inserts and tools in eleven sizes.

(Thread repair kits are a product of Heli-Coil Corporation, Dept. FP, 954 Shelter Rock Lane, Danbury, Conn. . . . or for more information check FP 1825 on handy form, pages 2 and 3.)

Switch to disposable NEW KIMWIPES and get 4-10 times more wiper area per dollar!

Don't let expensive cloth and waste wipers rob you of profits. Replace them with Type 1300 Kimwipes — the modern industrial wipers that are so soft, strong, absorbent and economical, they make ordinary wipers obsolete! A full 12" x 18" in size, Kimwipes 1300 hold up to eight times their own weight in liquids.

They're non-abrasive, too. There's no holdover of metal chips or other infectious material that may cause dermatitis (an infection that cost industry a loss of 2,500,000 man hours and a financial loss of nearly two million dollars last year). Type 1300 Kimwipes are absolutely clean to start with and are disposed of after use. Ask your salesman for a sample. And remember, you can also buy Type 900-S Kimwipes (optical wipers) and Type 900-L Kimwipes (precision wipers). Save money. Order today!

Kimberly-Clark Corporation • Neenah, Wisconsin

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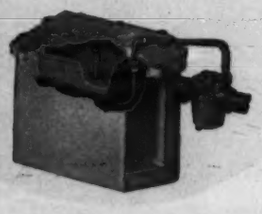
leading packing plants

are making money every day with Josam series "JH" GREASE INTERCEPTORS

Josam Series "JH" Interceptors allow you to turn waste grease into a steady profit at the turn of a valve! Meat packing and food processing plants are finding this interceptor an easy, profitable way to collect and dispose of grease and fats.

Draws off grease automatically at the turn of a valve.



● With the Josam "JH" Grease Interceptor you draw off intercepted grease to a convenient storage container at the turn of a valve. You never need to remove cover. Grease flows out of draw-off nozzle—no odor, no mess, no inconvenience. Intercepts over 95% of grease in waste water—prevents pipe lines from clogging.

This grease is readily salable because it is relatively pure. Why lose this valuable grease? Why risk citation by your local health authorities for violating ordinances forbidding dumping of hazardous waste matter? Find out how hundreds of plants throughout the U.S. are turning waste grease into profits—by sending coupon below today!

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General Offices and Manufacturing Division
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JOSAM MANUFACTURING COMPANY
Dept. FP • Michigan City, Indiana

Please send complete details on Series "JH" Grease Interceptors.

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FIRM_____

ADDRESS_____

CITY_____ ZONE___ STATE_____

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On-the-spot ventilation licks peanut processing dust

Cuts worker discomfort, equipment breakdowns at Planters' peanut plant

Problem: Troublesome dust was being produced by hoppers, bucket elevators, dirt reels, and screen graders in Planters' Suffolk, Va. peanut processing plant. Incoming raw peanuts were accompanied by soil, which shook loose with any agitation.

Fibers from the peanuts themselves (several thousand lb/day) filled the air. The dust was not only a nuisance to the workers but also entered the working parts of machinery, causing numerous breakdowns.

Solution: A local exhaust ventilation system, consisting of ductwork and hooding directly over dust-producing equipment, now carries dusty air to collector. Latter is bag-type with cloth in form of tubes. Collector has expansion chamber which decreases air velocity, permits coarse particles to drop out, lightens load on cloth tubes. Tubes are mechanically shaken.

Hoods and ductwork over open hoppers remove from air most of dust produced in dumping raw peanuts

Results: Cloth tubes collect dust at better than 99% efficiency. Collection total amounts to over 4000 lb per 40-hour week. Worker morale is much improved. Collected dust can be used for earth-fill purposes around plant.

(Dust collector described was manufactured by the American Wheelabrator & Equipment Corp., Dept. FP, 400 Byrkit St., Mishawaka, Ind. . . . or for more information check FP 1828, pages 2 and 3.)

The Convention and Exhibit Schedule will be found on page 13 of this issue

Warm COLD FEET with • THERMO-MAT •

Are COLD FEET because of cold floors a year round problem in your plant? We can solve your problems with our electrically heated Neoprene Thermo-Mats. (No rubber.) Will not affect room temperature. Describe type of floor and state air temperature in area of use.

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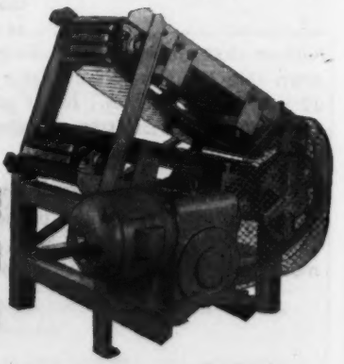
BURGEE CAN CRUSHER



the automatic, low-cost answer to your can disposal problems

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- Operates on 3 hp. motor . . . combines large capacity with low power consumption.
- Can be used with Burgee Can Opener to form a continuous automatic production line.

Get more information about this amazing unit from

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229-235 EAST SOUTH ST. INDIANAPOLIS 6, INDIANA

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ACE-FLEX®

. . . new **ALL-PURPOSE flexible plastic tubing**

Excellent chemical resistance. Clear, odorless, non-toxic, suitable for chemical processing, food products, medical use, machine hose, etc., . . . wherever a temporary or permanent fluid line or hose is needed. Easy to clean, can be steam-sterilized. All sizes from ⅛" to 1" ID. Write for technical data and prices . . . free bulletin 66 F.

ACE rubber and plastic processing equipment • SINCE 1852

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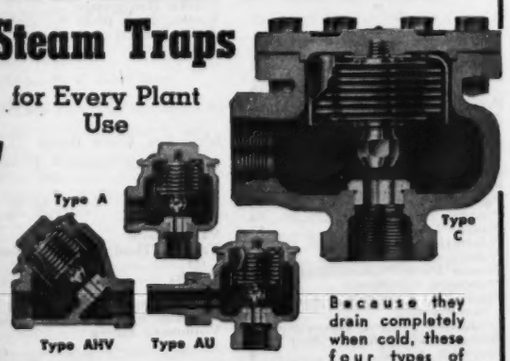
NICHOLSON MAKES

FREEZE-PROOF Steam Traps

for Every Plant Use



Because they drain completely when cold, these four types of Nicholson steam traps are positively freeze-proof. Can be freely installed outdoors. Universally recommended for use in lines which need not be in continuous use during cold weather, because they are freeze-proof and because their 2 to 6 times average drainage capacity results in minimum heat-up time. The non-air-binding feature of Nicholson traps also notably facilitates heat transfer in severe weather. Sizes ¼" to 2"; pressures from vacuum to 300 lbs. **BULLETIN 853**

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W. H. **NICHOLSON** & CO.

TRAPS · VALVES · FLOATS

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Discussed in This Issue - - -

PROCESSES, EQUIPMENT and MATERIALS

☆ Use this "quick-locator" when you want information on a specific type of process, equipment or material mentioned in the processing stories or the advertisements in this magazine. Everything discussed in this issue is given here, if you want more data you can write manufacturer direct . . . or turn to pgs. 2-3 and use the handy "Information Request Slip." This is a special service provided by the publisher . . . no obligation or charge, of course. The publisher contacts the proper manufacturers for you—information comes to you direct.

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Only Damp-Tex among wet surface enamel brands offers a system of painting that meets 23 special conditions. Non-toxic surface without flavor tainting odor? New non-yellowing whiter white? Want 30-minute drying? Extreme hardness and resistance to mildew acids and alkali? Just specify your special problem. The Damp-Tex System may give you the tailor-made answer.

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Please send representative to survey our plant and recommend the most advanced solutions without obligation.
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But belonging to NBP is more than a feather in our publishing cap. It's an important *plus* for every advertiser in FOOD PROCESSING. Here are the membership requirements. Judge for yourself:

- **Unbiased editorial content**
- **Periodic reader interest evaluation**
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In addition, NBP provides the framework for a continuing exchange of ideas among member publishers. The result: continuing improvement in publishing practices to make FOOD PROCESSING more useful to its readers . . . more productive for its advertisers.

* Courtesy of the publication MEDICAL ECONOMICS, creator of this copy, here adopted to FOOD PROCESSING

NBP

NBP

Food Processing

For men who manage the Food Processing Industries

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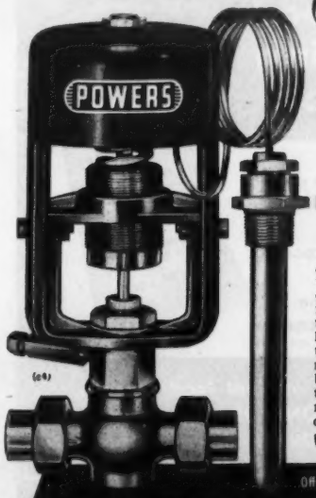

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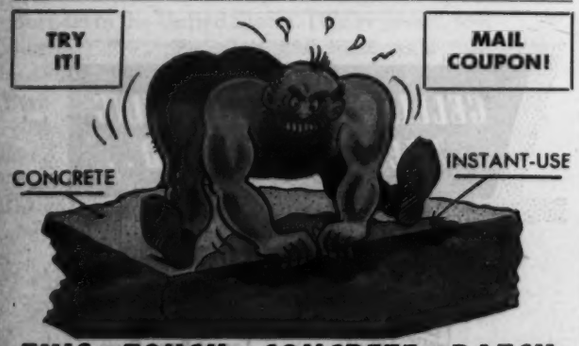

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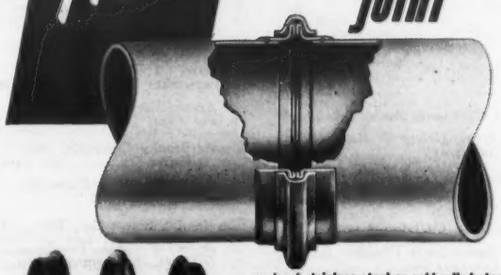

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"THAT'S INTERESTING"

Hidden movie camera "sees all" as shoppers select frozen foods

Over 86% of shoppers carefully examine packages in making selections of frozen foods. This fact is revealed in motion pictures taken in super-marts with a hidden camera. Five different sections of the country were studied in this manner to record a faithful, unbiased picture of shopping habits. An average of 2.38 packages was handled by all shoppers. Breakdown shows 69.3% of customers were women; 14.2% men; 16.5% couples. This is the third such motion picture produced by Marathon Corp. Film is shown through arrangement with the company's representatives. A booklet containing statistical study of the findings is distributed at each showing. (Marathon Corp., Dept. FP, Menasha, Wis.)

Watermelon juice bank

A watermelon juice bank has been established at Beaumont, Texas. Juice is prescribed in treatment of rare kidney disease which sometimes strikes children. National Association of Refrigerated Warehouses has suggested that its members store such juice for hospitals.

"What's my name —?"

Findings of a survey reported at a joint meeting of biscuit and cracker manufacturers showed that many housewives were reluctant to serve cookies with brand names stamped on them. Reason was a possible reflection on culinary ability. It was suggested that more of a home made appearance in bakers' cookies and absence of brand name might boost sales. (Flavor Newsletter—Food Materials Corp., Chicago 32, Ill.)

"Business Without Boundary"

"Business Without Boundary" is the history of General Mills and the four companies which were merged to create it. Covering the period from 1839 to the present it affords an intimate glimpse into the early days of the industry: the rise of Minneapolis as the milling center of the world, the rivalries of the pioneers, the battle for water power, and "the milling revolution."

Through the pages move such dynamic figures as Cadawaller and W. D. Washburn, John Crosby, Charles A. and John Sargent Pillsbury, Albertus Larrowe, and Austin Sperry. Many of the early millers are revealed as men who "wore profuse beards, high silk hats and spoke to one another in the grand manner, although frequently exchanging blows in water power disputes".

Approaching more recent times, the book tells of the development of many of the General Mills products and the ideas used in promoting them.

Other chapters discuss General Mills as an operating company and the war and post war years under Harry A. Bullis, who has been president since 1942.

"Business Without Boundary", The History of General Mills by James Gray, $4.75 is published by University of Minnesota Press, Dept. FP, Minneapolis 14, Minn.

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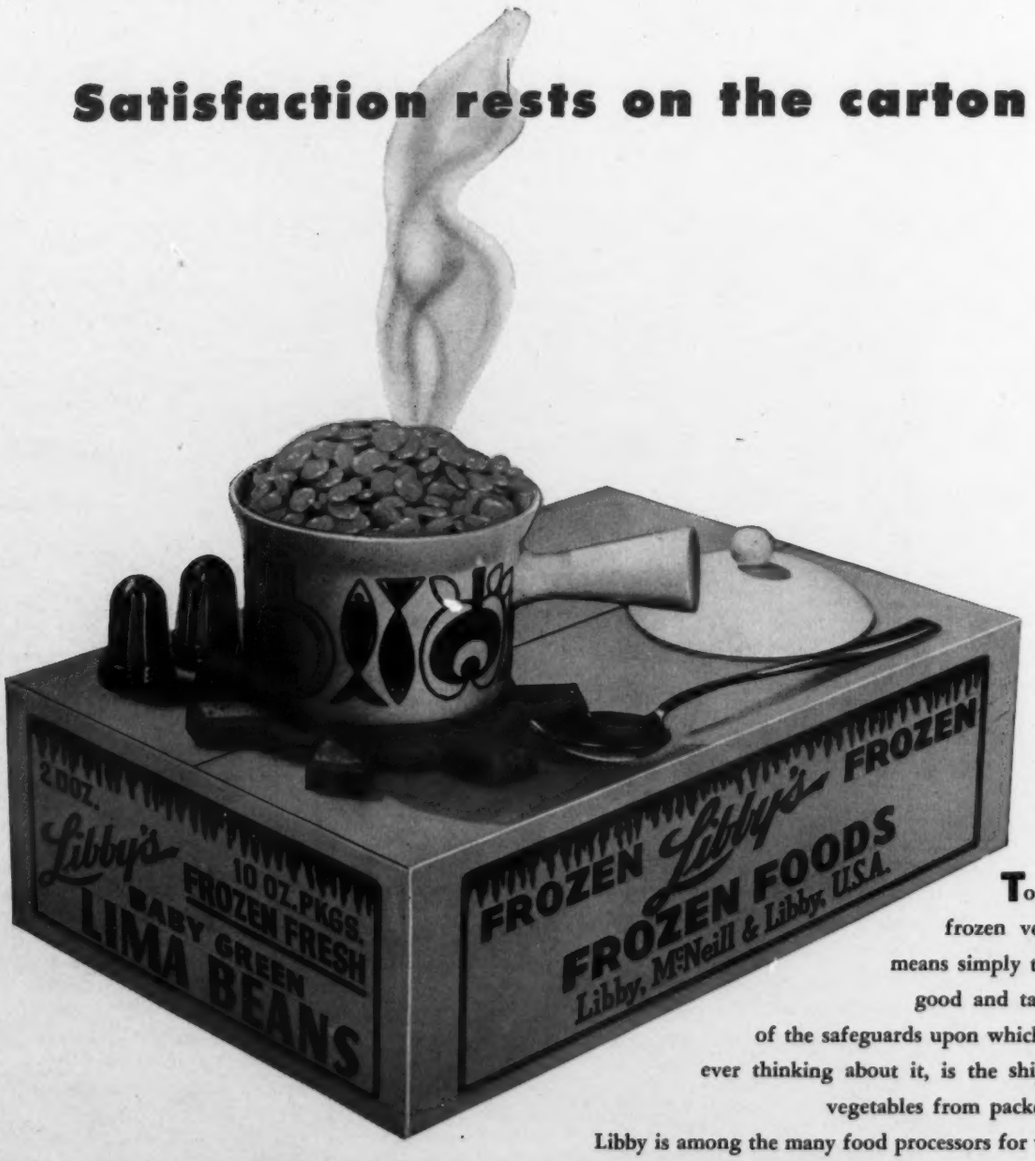
Satisfaction rests on the carton



To the housewife who has bought frozen vegetables for dinner, quality control means simply that she can trust them to look good and taste good when she serves them. One of the safeguards upon which she depends, probably without ever thinking about it, is the shipping carton that carries her vegetables from packer to retailer. Libby, McNeill & Libby is among the many food processors for whom Union corrugated shipping containers continue to do an unheralded but important job.

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